Marine Review

The National Publication Covering the Business of Transportation by Water

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A. H. Jansson, *Editor*
H. O. Taylor, *Advertising Manager*

Chicago Office, 1347 Peoples Gas Bldg.
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E. C. Kreutzberg
B. K. Price
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Westminster, S. W. 1
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« EDITORIAL »

Regulate Intercoastal Traffic to Abolish Rate Wars

THE bill now pending in congress authorizing the United States shipping board to regulate rates in intercoastal traffic should become law. This trade has grown to tremendous proportions since the opening of the Panama canal and experience proves conclusively that there is no self-imposed remedy for unfair competition. On what just grounds can there be opposition to this bill which is intended, according to the senate commerce committee, to prevent secret rebates and cutting of prices to favored shippers; to establish uniformity and to guarantee to the public stability of rates?

Under existing laws, the shipping board does not have the power to enforce just and reasonable rates and practices. Its only present authority refers to maximum rates. Why not give the board equal power in controlling the minimum rate? The bill is designed to give the shipping board the necessary authority.

As the senate committee points out the proposed legislation merely fills in certain gaps in the shipping act of 1916 which are urgently required in the best interests of all, shippers, shipowners and the government.

Secret convenants are not permitted the railroads. Rebates, once allowed, are now taboo. In railroad transportation there are no favored shippers. Considerable experience had to be acquired before this salutary regulation came about. Intercoastal shipping has now had its quota of disastrous experiences in rate wars and it is time to have a change.

The argument has been presented in opposition to the bill that the railroads are in favor of it. In all fairness, the railroads, who are themselves subject to regulation and control, are entitled to an orderly rate-making system for the water lines. Let the differential in the real cost of transportation of the two systems provide competition.

The proposed regulation is said by those who oppose it to be directed by the big lines against the little fellows. This is absurd on the face of it. The little fellow will be better off if he doesn't ruin himself by accepting rates on which he cannot possibly make both ends meet. There will be ample competition and no danger of exorbitant rates. Any shipper, or a combination of shippers, can enter his protest to the shipping board which as a part of the government, is his servant and is subject to the control of his representatives in the congress. The time has come for less individual selfishness and more co-operation for the common good and the present times have demonstrated that that sort of a policy is of more enduring benefit. This bill should receive the approval of congress as quickly as possible to relieve shippers and shipowners alike, in one of our great transportation services, from chaos and serious losses to all.

Steam or Diesel—Which Shall It Be?

ONE of the recent luncheon meetings of the Propeller club at New York was enlivened by a discussion of the subject of steam versus diesel for ship propulsion, J. H. King, manager, marine department, the Babcock & Wilcox Co., stating the case for steam, and Louis R. Ford, consulting diesel engineer and editor of *Motorship,* giving the diesel point of view. The debate was marked by more reasonableness and more of a spirit of give and take than is usually the case when this moot question is under consideration. We shall quote here at random from the statements made prefacing each quotation with the words **Steam** or **Diesel** as the case may be.

Diesel: It may be well to note that in the past three years 2,900,000 gross tons of motorships and 2,000,000 gross tons of steamers have been built. In other words, 60 per cent of the world's tonnage built in that time is motorship tonnage. We may paraphrase the expression concerning the Frenchman and say that 2,900,000 tons cannot be wrong.

Steam: In making comparisons, make sure that you are not comparing old-fashioned, inefficient or obsolete steam machinery with the modern diesel. When comparing fuel consumption be sure that you consider the fuel consumption for all purposes per shaft horse-

power. Do not compare indicated horsepower with shaft horsepower which is the measure of power delivered to the propeller shaft and that is what counts. Total fuel includes fuel for blowers, compressors, generators, pumps of all kinds, etc., and also all heating. Don't forget lubricating oil.

Diesel: Diesel development has proceeded to the point where the engine is no longer in any sense an experiment. It no longer presents any hazards in operation greater than any other type of marine machinery. Choice then, need be influenced but slightly by technical engineering questions. Rather must it be based largely on economic grounds. We may find steamships today operating on 0.65 pound of fuel per brake horsepower per hour, although by no means can all of them do it. On the other hand, we find motorships operating with a fuel consumption as low as 0.37 pound per brake horsepower per hour.

Steam: In analyzing weight, include the weight of all the machinery. In the steamship the weight includes boilers with all oppurtenances, turbines, gears, all pumps, generators, blowers, piping, etc. In a motorship the weight should include all the machinery also, not merely the engine with its main auxiliaries. With the foregoing as a basis, let us see the advantages of modern steam machinery, which means higher pressures and temperatures, improved boiler and turbine design, up-to-date auxiliaries, higher vacuum apparatus and other improvements.

Diesel: Taking a cargo vessel of 9800 tons of deadweight, speed 15 knots and propulsion machinery of 6500 brake horsepower and assuming the previously mentioned best consumption figures of 0.65 pound for the turbine vessel and 0.37 pound for the motorship, the daily consumption of the steamer at sea will be 45 tons and of the motorship 26 tons. At the present cost in most United States ports of boiler fuel at 65 cents per barrel and diesel fuel at $1.30, a condition that exists nowhere outside of the United States except in Brazil, the fuel bill of the steamer will be $193 per day, and of the motorship $236 if bunkering can be done in the United States, but if fuel must be obtained outside the United States, the prices are of the order of $11.50 per ton for boiler oil and $15 per ton for diesel fuel so that the daily fuel cost for the steamer will be $517 and for the motorship $390.

Steam: For many types of ships steam has the lowest first cost consistent with economical operation. While the actual fuel consumption is not quite as low as for the diesel, the fuel costs are lower. Modern steamships in actual service for more than a year have averaged less than 0.6 pound of oil for all purposes per shaft horsepower per hour. Recent improvements and future advancements will further lower this fuel consumption. Considering market price of boiler oil as compared with diesel oil in most parts of the world, the fuel cost of the modern steamer is considerably less than than that of the best motorship.

Diesel: The machinery of the motorship considered can be built today to weigh 789 tons including everything in the machinery space. The corresponding turbine installation will weigh 700 tons, to which 100 tons of fresh water must be added, for a 30-day trip, making the steam weight 800 tons. For a trip of this length the motorship will require 777 tons of fuel and the steamship 1350 tons; the weights of machinery plus fuel becoming 1566 tons and 2150 tons respectively; the cargo capacity being affected in this ratio. Cost has been a great handicap of the diesel engine in the United States. We have become used to thinking of it in terms of about $100 or more per horsepower. It is not generally realized that at this time prices of the order of $37 per horsepower can be quoted.

I would like to bring your attention to the remarkable performance of the recently completed American-built motortanker, DAYLIGHT. The DAYLIGHT proceeded from New York to Beaumont, Texas, on her maiden voyage, loaded cargo and proceeded to Bombay, India. On this voyage, the engine operated continuously for over 51 days without a stop. After a quick turn around at Bombay she sailed from Karachi to San Pedro, Calif., and for over 43 days the engines operated without a stop. After another turn around at San Perdo she proceeded to New York, running 20 days without engine stoppage except for transit of the Panama canal. This globe circling trip was made with the fuel taken on at the beginning of the voyage; not one cent was required for engine repairs. No steamer afloat could duplicate this performance.

Steam: The first modern steamship in this country was the Southern Pacific S. S. DIXIE which continues to have a fine record of performance. Other examples of real economy in modern steam design are the new United States liners MANHATTAN and sister ship; the PRESIDENT HOOVER and PRESIDENT COOLIDGE; and the Matson liners, MARIPOSA, MONTEREY and LURLINE. The MARIPOSA is bettering in actual service the fine record made on her trial trips. Other ships are the three Panama Pacific liners, the

four new Panama Mail ships, the six new United Fruit steamers (the United Fruit Co. had experience with motorships and converted the DARIEN to modern steam before ordering these six steamers). In smaller powers are the Sinclair tankers, HARRY F. SINCLAIR and VIRGINIA SINCLAIR, the Standard Oil tankers, G. HARRISON SMITH and W. S. FARISH. These four tankers are the most economical vessels of their class.

Furness Withy after building the motorship BERMUDA built the modern steamship MONARCH OF BERMUDA and are now building another steamship to replace the BERMUDA destroyed by fire. The motorship ASTRURIAS is about to be equipped with modern steam machinery. The French line built the cabin motorship LAYFETTE and yet the CHAMPLAIN, also a cabin ship, and their new superliner will be steam driven. The Italian lines operate the motorships VULCANIA, SATURNIA and AUGUSTUS, but their two new superliners will have modern steam. The modern steam plant is thoroughly reliable, is highly economical, has a low first cost and low actual fuel cost burning any type of fuel available. Maintenance costs are low and there is always an adequate supply of competent personnel.

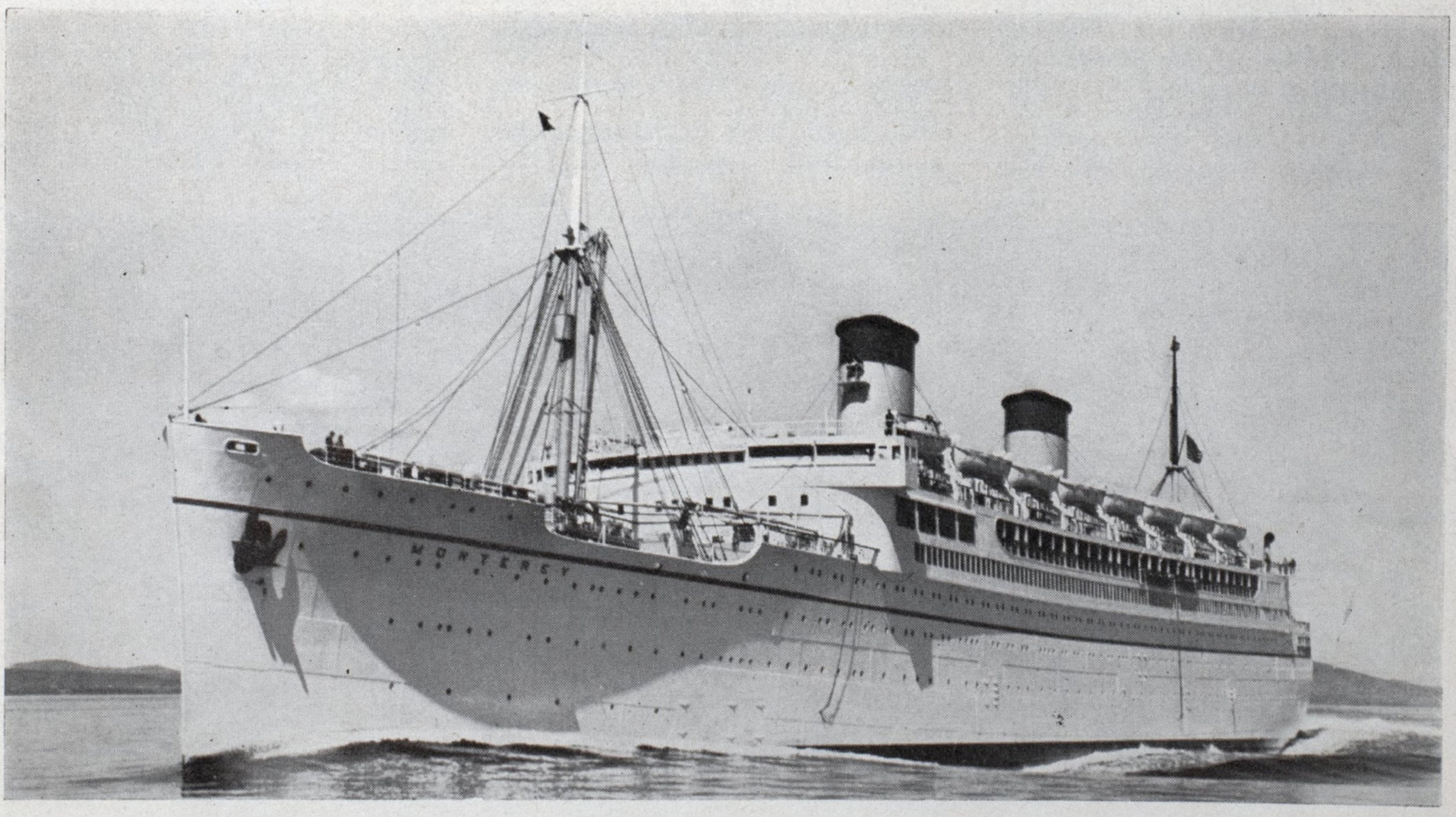
Monterey, New Matson Liner Enters Service

ANOTHER magnificent ship has been added to the American merchant marine, the MONTEREY, second of three new ocean liners for the Matson Navigation Co. for service between San Francisco, the islands of the South Seas, Australia and New Zealand. The MONTEREY is a sister ship of the MARIPOSA, completely described and illustrated in the February, 1932 MARINE REVIEW. The third sister ship, the LURLINE is now under construction at the Fore River yard, of the Bethlehem Shipbuilding Corp., Quincy, Mass. where the MARIPOSA and MONTEREY were also built.

Official trials of the MONTEREY were held off Rockland, Me. over the measured nautical mile course, where the vessel had proceeded from the yard of the builder, during the two days, April 21 and 22. Speed on the highest run was 23.003 knots. Average high speed was 22.26 knots. Power developed during the highest speed run was 28,900 shaft horsepower. Power developed for the average of the high runs was 28,825 shaft horsepower. Displacement on the trial draft of 25 feet 4 inches was 23,250 tons. Fuel consumption, average for all purposes during the 12-hour full power run at 23,130 shaft horsepower and 21.42 knots was .626 pound per shaft horsepower per hour.

The MONTEREY sailed from Boston 11 a.m. May 7, arrived in New York harbor 6 p.m. the following day and docked at 9 a.m. May 9. She sailed from San Francisco at noon on May 12 with 83 passengers and 2100 tons of freight. With stops at Havana, Panama Canal, San Diego, and Los Angeles she was scheduled to arrive in San Francisco on May 29. On June 3 she begins her regular run to Sydney, Australia, arriving at the latter port June 23.

The MONTEREY is a twin screw turbine geared liner with passenger accommodations for 704. Her length over all is 631 feet 6 inches; length on the waterline 628 feet; length between perpendiculars, 605 feet; beam molded 79 feet; depth molded to B deck 61 feet. Her displacement on a mean draft of 28 feet is 25,827 tons.



Twin Screw Turbine Reduction Geared Liner Monterey, Second of three New Vessels for the Matson Navigation Co. Built by Bethlehem Shipbuilding Corp., Quincy, Mass. Photograph taken During High Speed runs off Rockland, Me., April 22

S. S. SAINT JOHN

Palatial Eastern Liner Begins Service

First of Two New Vessels—Between U. S. and Canada's Maritime Provinces—Twin Screw Turbine Reduction Gears—Speed Over 21½ Knots

THE Newport News Shipbuilding & Dry Dock Co., Newport News, Va., on April 22, 1932 delivered to the Eastern Steamship Lines, Inc., the palatial, $3,500,000 twin screw passenger and freight steamship SAINT JOHN, the first of two large fast coastal liners for service between the United States and Canada's maritime provinces. The vessels were designed, and built under the direct supervision of the outstanding naval architect and marine engineer, Theodore E. Ferris, 30 Church street, New York, in close collaboration with Capt. Eugene E. O'Donnell, president of the Eastern lines and represent the very latest features in marine design and appointments.

The delivery of the SAINT JOHN marks another chapter in the record of efficiency in management and production for which the Newport News Shipbuilding & Dry Dock Co. has long been noted, and once more brings to mind the motto of the founder Collis Potter Huntington, "We shall build good ships here. At a profit if we can. At a loss if we must. But always good ships." The confidence reposed in this shipyard by the designer of the SAINT JOHN is attested by the fact that during the past seven years sixteen of the passenger and cargo vessels designed by him have been built here, and represent a total of approximately 101,000 gross tons.

The SAINT JOHN was launched on Jan. 9, 1932. Her sister ship the ACADIA was launched on Feb. 13, 1932, and will be delivered early in June.

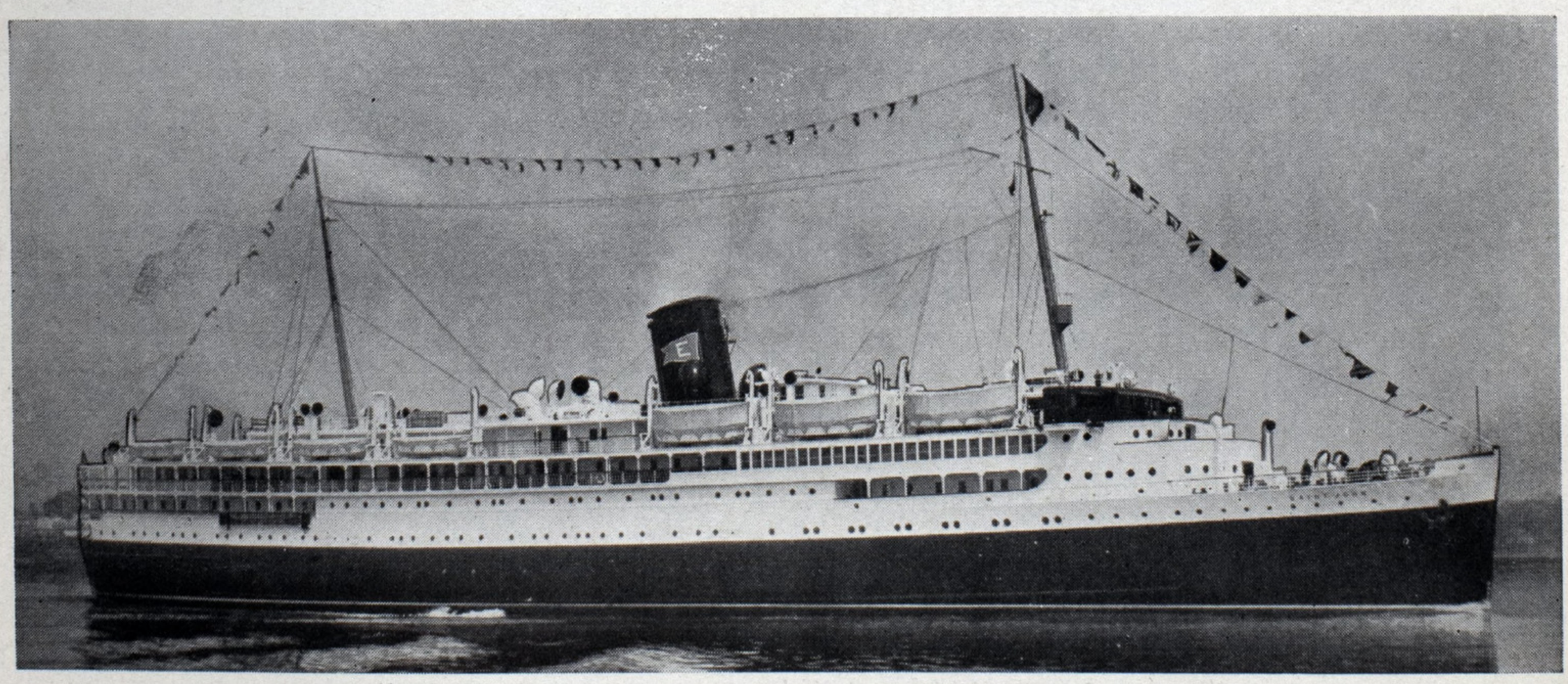
This yard has constructed some 350 vessels representing a total of approximately 1,390,000 gross tons since the DOROTHY a small tug, was delivered in the spring of 1891.

The addition of these two new ships will gave the Eastern Steamship Lines, Inc. a total of 33 ships, with a gross tonnage of approximately 96,300 tons, the largest, most luxurious, and efficient fleet of vessels on the Atlantic seaboard. The SAINT JOHN and ACADIA are the first ships ordered by the owner in several years, their last predecessors being the YARMOUTH and EVANGELINE built in 1927. The latest acquisitions will be the speediest of the fleet, being over two knots faster than any of the other ships.

The SAINT JOHN was named for the historic city in the province of New Brunswick, Canada. The ship was christened by Mrs. Robert G. Stone of Boston, the wife of one of the directors of the Eastern Steamship Lines, Inc. Water used in the christening was taken from the famous Reversing falls located near the mouth of the Saint John river. The remarkable tides of the Bay of Fundy reverse the direction of the flow of these falls twice a day creating a veritable tidal wave as the

General Particulars

Owner	Eastern Steamship Lines, Inc.
Builder	Newport News S.B. & D.D. Co.
Contract date	Feb. 25, 1931
Keel laid	July 20, 1931
Launched	Jan. 9, 1932
Sea trials	April 14, 1932
Delivered	April 22, 1932
Contract date for delivery	May 1, 1932
Maiden voyage, from Boston	May 2, 1932
Classification	American Bureau of Shipping
Length overall, ft., in.	402 11
Length on waterline, ft., in.	400 3
Length between perpendiculars, ft., in.	387 0
Beam, molded, ft., in.	61 0
Depth, molded to upper (D) deck, ft., in.	29 9
Depth, molded to boat (A) deck, ft., in.	54 6
Sheer forward, ft., in.	6 6
Sheer, aft, ft., in.	3 2
Draft, designed, above base line, ft., in.	18 0
Draft, load to bottom of keel, ft., in.	20 1⅞
Displacement, to d.l.w.l., tons	6811
Block coefficient at d.l.w.l.	.536
Prismatic coefficient at d.l.w.l.	.566
Gross tonnage	6185.46
Net tonnage	3020
Speed, service, knots	20-22
Shaft horsepower, designed at 168 r.p.m.	9500
Maximum shaft horsepower at 178 r.p.m.	11,400
Steaming radius @ 18 knots (naut. mi.)	5000
Deadweight at max. load draft, tons	2494
Cargo capacity, cu. ft.	163,500
Fuel oil capacity, tons	659
Reserve feed water, tons	157
Culinary and drinking water, tons	608
Ship's cold storage, cu. ft.	3400
Passengers, first class	657
Passengers, berth travel, men	57
Passengers, berth travel, women	30
Officers and crew	179
Persons, total on board	923



S. S. Saint John Built by Newport News Shipbuilding & Dry Dock Co. for Eastern Steamship Lines Inc.

Theodore E. Ferris
Designer of the S. S. Saint John

water advances.

During the summer vacation season, from May until November, the SAINT JOHN will, operate between Boston and Saint John, covering the 286 nautical miles in an easy overnight run, leaving Boston at 5:00 p.m. and arriving at Saint John at 9:30 a.m. the next day. She will make three round trips a week during the rush season. The entire main deck freight space can be given over to auto storage for the transportation of tourist motor cars. During the remainder of the year the vessel will operate between New York and Boston by way of the Cape Cod canal, alternating with her new sister ship the ACADIA.

Fast Modern Ships

The SAINT JOHN and ACADIA were built with the assistance of the United States shipping board construction loan fund under the provisions of the Jones-White act, and under the terms of a mail contract awarded to the Eastern Steamship lines by the United States postoffice department. Due consideration was given to the requirements of the United States navy department, as well as complying strictly with the various requirements of the international convention for the safety of life at sea (1929) and the new "freeboard rules" of the United States steamboat inspection service.

The vessel is of the three deck complete superstructure type with a combined bridge and forecastle deck, having twin screws, cruiser stern, and straight raked stem with the bulbous bow now quite common to modern fast American built ships. The masts and single stack are all raked aft smartly, and with the high superstructure above the waterline, the ship gives one the impression of size and speed. In addition to forward and after peak tanks, the subdivision provides for three cargo holds forward, with the boiler and engine rooms amidships, and three holds aft. The principal dimensions and characteristics are given in tabular form on page 14.

The SAINT JOHN was built under special survey of the American Bureau of Shipping to class + A-1 E with "freeboard." The classification requirements not only pertaining to the construction, workmanship and quality of the hull, but also to the machinery, boilers, fuel oil system, ballast system, refrigerating plant, electrical apparatus, and other outfits. All requirements of the United States steamboat inspection service, and the United States public health service have been complied with. American marine standards have been used to a large extent.

The hull is built of steel, transversely framed, the frame spacing being 27 inches in general, with 24 inches in the peaks. The side frames are principally channels and fitted on every frame. A cellular double bottom extends from the forward collision bulkhead to the after peak bulkhead, the after section of the double bottom being in the form of a deep double bottom tank extending up to the lower deck.

The hull is subdivided into ten compartments by nine watertight steel bulkheads extending to the upper deck with the fore peak bulkhead extending up to the forecastle deck. The bulkheads are located and arranged so that the ship will remain afloat with ample stability when any two major compartments are open to the sea, which is in excess of the requirements of the international convention for the safety of life at sea (1929).

Has Six Complete Decks

There are six complete decks, designated as the boat (A) deck, promenade (B) deck, bridge (C) deck, upper (D) deck, main (E) deck, and lower (F) deck. The bridge deck is the strength deck over the full length of the vessel. The upper deck is completely plated, as are also the main and lower decks. The bridge and promenade decks are partially plated. All decks exposed to the weather below the boat deck are planked with comb-grained Oregon pine. The boat deck and the tops of the houses are canvas covered with tongue and grooved North Carolina pine decking under.

No expansion joints have been fitted. The tumble-home at the sides is 21 inches at the bridge deck, and contrary to usual practice, the promenade and boat decks do not overhang the decks below, but are the same breadth as the bridge deck.

Three strakes of the shell plating adjacent to the 17-foot waterline are doubled for 50 feet aft of the stem for protection against damage by ice. Doublings are fitted in way of

Sea Trials, Saint John

ON April 14, the Saint John was given a sea trial off the Virginia capes, during which speed and economy runs were made between Chesapeake and Winter Quarter light vessels, a distance of 67.5 nautical miles. One run was made in each direction, the average speed obtained being well in excess of 21 knots at 183.3 revolutions per minute. Although the average depth of water over this course is only 83 feet, which is shallow for a vessel of this size and speed, the results obtained easily exceeded the contract guarantees for speed and power. Windlass, and steering gear tests were successfully made during this time. The speed on the trial runs was taken by observation, and also by means of a pressure log developed in collaboration with the United States Experimental Model basin. The trial was run at a mean draft of 17 feet 9 inches, and a displacement of 6580 tons.

Eugene E. O'Donnell
President, Eastern Steamship Lines Inc.

the bulbous bow for protection against damage by the anchors. Bilge keels of simple design are fitted at the turn of the bilge for about 125 feet amidships, and a steel plate fender of the trough type projecting out about 10 inches is fitted for about 270 feet amidships following the line of the main deck. At the after end of the ship a similar fender is fitted in line with the upper deck.

Ample Fuel Oil Storage

The fuel oil service tanks are built in abreast the boilers, and at the forward end of the boiler room. At the after end of the engine room and outboard of the twin shaft tunnels on each side, and extending from the shell to the lower deck level, fresh water tanks are formed by watertight transverse and longitudinal bulkheads.

Special bilge protection tanks are built-in at the outboard sides of the engine room, and at the after end of the boiler room to offer extra protection to these spaces from possible damage while operating in the Cape Cod canal.

The stem is made of steel flat bar with a slight forward rake, and as customary in fairly fine vessels, the lower section is a steel casting conforming to the shape of the bulbous bow in that region. The stern frame is of cast steel in several sections, of trough shape conforming to the shape of the hull. Very little bossing is fitted, cast steel struts support the propeller shafts, and boss end castings of cast steel support the after end of the stern tubes. All of these castings, as well as those for the rudder frame were made by the Newport News Shipbuilding & Dry Dock Co. in its own foundry, and have been carefully streamlined to avoid excessive resistance.

A spade type rudder of aerofoil streamline design patterned after the rudder proposed for the United States superliners has been fitted. After the type of rudder was decided upon, the builder conducted exhaustive investigations and model tests to obtain a rudder of the most satisfactory form and proportions to suit the size and speed of the vessel. The rudder is constructed of steel plates welded to a cast steel frame, with some structural stiffening. The width of the rudder at the top is 36 inches and tapers to 16 inches at the bottom. It has been so balanced that at all helm angles up to 35 degrees it is practically in equilibrium. The steering gear power required at various angles was recorded on the trial trip and was found to be only twice as much at over 20 knots as was recorded in similarly turning it at the dock with the vessel not moving. This not only is economical in power, but also provides unusually rapid handling which is especially desirable in canal navigation.

In general, the airports in the passenger accommodations on the upper and bridge decks amidships are 15 inches in diameter. In the passengers' dining saloon they are 18 inches in diameter, fitted in pairs. Airports of the same size are also fitted in the bridge front bulkheads and in way of the enclosed promenades on both the bridge and promenade decks. Metal frames windows, mechanically operated, are fitted in the passengers' accommodations elsewhere on the bridge and promenade decks, and metal framed casement windows in the public spaces. The frames for these windows are of bronze. Storm windows, alternately fixed and sliding, are fitted at the sides of the enclosed promenade on the promenade deck, the sliding windows being mechanically operated. All metal framed windows were supplied by the Kearfott Engineering Co., New York.

The ground tackle includes two bower anchors, one spare bower anchor, and one stream anchor. All are of the stockless type made by the Baldt Anchor, Chain & Forge Co., Chester, Pa. The National Malleable & Steel Casting Co., Cleveland, supplied the anchor chain which consists of 270 fathoms of 2¼-inch cast steel stud link chain in 15 and 30 fathom shots. The stream line consists of 90 fathoms of 4½-inch circumference steel wire furnished by the Wickwire Spencer Steel Co. New York. The cast steel chain stoppers were furnished by the Hyde Windlass Co., Bath, Me.

Keeping Staterooms Cool

An unusual feature of the SAINT JOHN is the provision made for keeping the staterooms cool in hot weather by insulating the shell in way of the passengers' accommodations on the upper deck. This is done by cementing 1-inch block cork to the shell with an air space between the cork and the joiner work. The crew's sleeping quarters amidships on the main deck are similarly protected.

The actual construction of the hull and machinery was under the direct supervision of Alfred J. Ingham, acting as the designer's chief resident inspector, with William H. Barr and Robert Neeson as assistants on hull work, and by William Glover as chief machinery inspector assisted by Chief Engineer William Errgong and A. C. Goodwin.

Lewis C. Host, J. L. Walsh and F. G. Breckenridge were the local inspectors for the American Bureau of Shipping throughout the entire construction of the vessel.

The architectural design of the public spaces is the work of Donald G. Mackee, interior designer on Mr. Ferris' staff, who also collaborated with Irvin & Casson—A. H. Davenport Co., Boston, on the furniture and furnishings supplied by this company.

Old English, with a slight modern timbre, is the dominant note in the design and furnishings of the principal public spaces. From the standpoint of passenger comfort, and provisions for the welfare of the personnel, the SAINT JOHN compares favorably with modern transatlantic liners.

First class passengers are berthed in staterooms and deluxe suites on the main, upper, bridge, promenade, and boat decks as follows:

	Rooms	Persons
Boat (A) Deck		
Special staterooms with private shower and toilet	7	21
Special staterooms with connecting shower and toilet	2	6
Regular staterooms	8	20
Total (A) Deck	17	47
Promenade (B) Deck		
Special staterooms with private shower and toilet	12	36
Special staterooms with connecting shower and toilet	2	6
Special staterooms with private toilet	8	20
Regular staterooms	9	23
Total (B) Deck	31	85
Bridge (C) Deck		
Suites with private bath and toilet	8	16
Special staterooms with private shower and toilet	2	6
Special staterooms with private toilet	28	56
Regular staterooms	75	186
Total (C) Deck	113	264
Upper (D) Deck		
Suites with private bath and toilet	6	12
Special staterooms with private shower and toilet	4	12
Regular staterooms	73	187
Total (D) Deck	83	211
Main (E) Deck		
Regular staterooms	22	50
Grand Total	266	657

All the staterooms are arranged to open on inside or protected passageways leading directly from the various stair lobbies. On the bridge deck amidships there is rather a unique stateroom arrangement in that in this location the width of the deck is such that staterooms two-deep are fitted, but instead of bibby or inside rooms there is an "outside" passage between the two banks of staterooms. This passage is fitted with heavy teak doors at each end which may be closed when desired, thus providing an inside passage.

Fourteen Deluxe Suites

The beds in the passenger staterooms are of metal in mahogany finish, made by the Simmons Bed Co., Kenosha, Wis. Each "regular" stateroom is furnished with a large

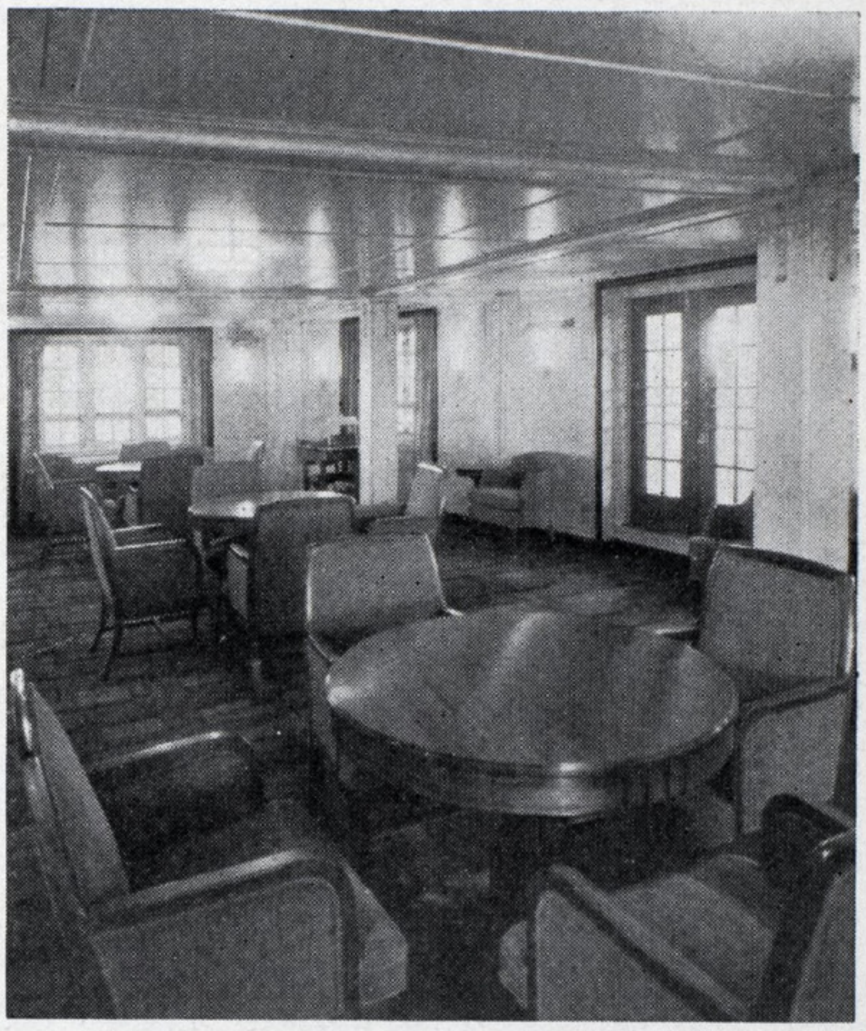
Below, Main Dining Room

Above, After End of Smoking Room

S. S. Saint John

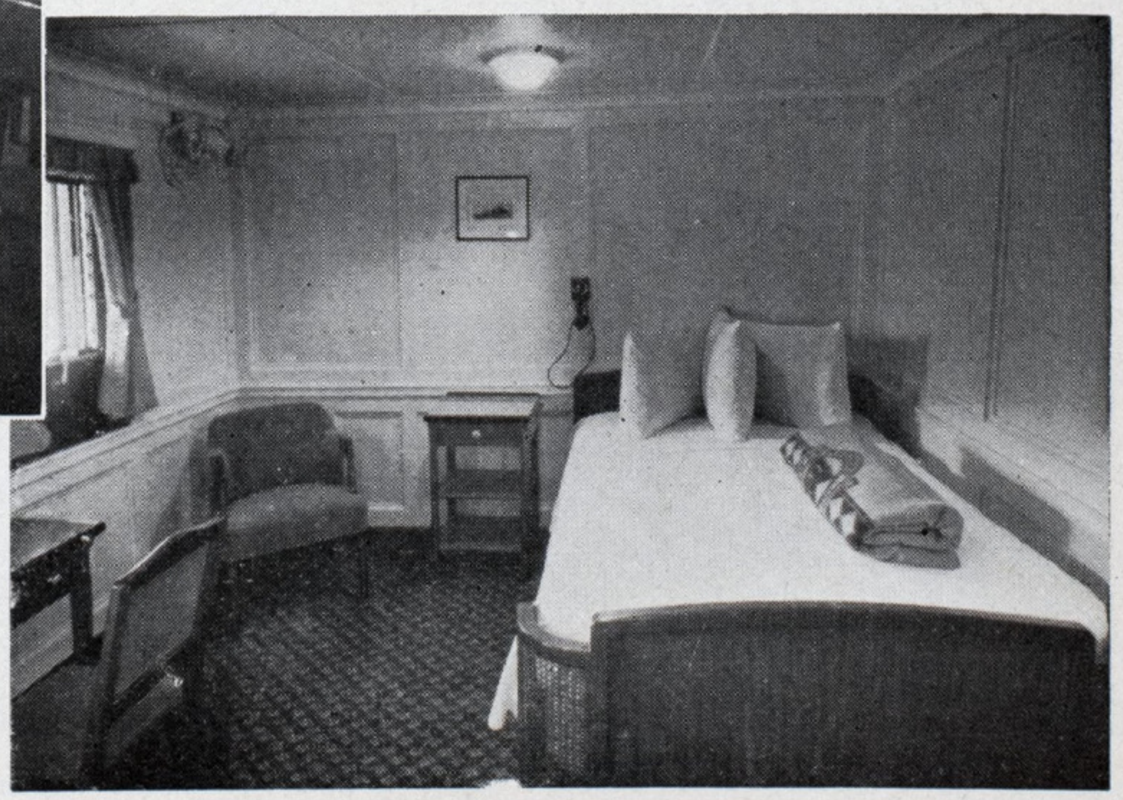
Interiors

First Class



Above, Section of Library

Above, Lounge and Music Room



Right, First Class Stateroom

lavatory with running hot and cold water. Soft luxurious carpets are laid on the floor of all the staterooms and suites and window drapes are fitted in way of all windows and airports.

Of the fourteen deluxe suites, two are fitted up specially for the owner, one for the president, and one for the director. All of these suites are regal in appointments. The finish of the suites varies, some are finished in white mahogany, others in Oriental woods, and the remainder in maple. There is a commodious wardrobe, a dressing table, chiffonier, night table, two easy lounge chairs, and a side chair in each suite.

Fine Special Staterooms

The "special" staterooms, those which have a toilet and shower, are fitted with large wardrobes and large dressing tables, and comfortable side chairs, in addition to the furnishings mentioned for the regular staterooms. The furniture in the staterooms and suites is finished in Santo Domingo mahogany.

Numerous public baths, showers, and toilets are provided on every deck for the convenience of passengers. These are entirely enclosed by light steel bulkheads with flat bar stiffeners to simulate panel work, and finished in white enamel. Plumbing fixtures and accessories were supplied by Dalton-Ingersoll Mfg. Co., Boston.

Accommodations are provided on the lower deck aft for the berth travel passengers. The men are berthed on the starboard side in one large space, provision being made for 57, and the women berthed on the port side in a similar manner with 30 berths in the space. White enameled pipe berths are fitted three-high, and were supplied by The Rome Co., Baltimore.

The officers and crew, to the number of 179, are berthed on the main deck amidships, on the upper deck forward, and forward on the boat deck. Their accommodations are better than usual for this type of vessel, which is in keeping with the policy of the owner.

With the exception of the entrance lobbies and the main dining saloon, which are located on the upper deck, all the public spaces are located above on the promenade deck. At the forward end of the promenade deck there is an observation deck for passengers. Aft of the observation deck there is a complete circuitous promenade, protected across the forward end and part way down the sides by large windows.

Plywood is used for the panel work of the ship throughout the passenger accommodations for passageways and alcove bulkheads, and also the division bulkheads of the staterooms, and for considerable of the panel work in the public spaces. The plywood was supplied by the Roddis Plywood Co., New York, Haskelite Mfg. Co., Chicago, and Palmer & Parker, Boston. Vehisote or in some cases, plywood ceiling panels are fitted under the deck beams in public spaces, suites, special rooms, private toilets and baths, and for passages and alcoves.

Boat Deck House Wood

The house on the boat deck is constructed of wood, sheathed on the outside with tongue and grooved spruce and finished in vehisote, except in way of the wheel house which is staved with teak up to the under side of the window sill with plain teak paneling above. The inside finish of the wheel house is tongued and grooved chamfered cherry. The officers' quarters are finished in oak. The doors to passengers' staterooms are of Mexican mahogany, the trim in these rooms being of a similar finish. Considerable of the hardware used throughout the vessel was supplied by Topping Brothers, New York city.

There are two main stairways, one forward and one aft, giving the passengers convenient access to all decks. The stairways are finished in Mexican mahogany with wrought iron balustrades. At each landing, generally, there is an etched decorative mirror, or mural. Domes or skylights are fitted over the stair wells with leaded artistic glass screen beneath.

At the after landing at the boat deck level there is a most interesing mural depicting a view of the harbor of Saint John as it is today, and as it was in 1604 when visited by Champlain. All murals were painted by Carroll Bill.

The stair lobbies, in general, are finished in Mexican mahogany to a low wainscot height, with a light ivory paint finish above, except the forward lobby on the upper deck adjacent to the main dining saloon which is finished for the full height in diamond matched panels of Mexican mahogany.

The main entrance lobby, which is located at the after stairway on the upper deck is beautifully finished in diamond matched full height panels of Mexican mahogany. The purser's office is located at the forward end of this space, while at the after end on the port side there is a modern barber shop. In a corresponding location on the starboard side there is a large coat room, with an adjacent news stand.

Main Dining Saloon

The commodious main dining saloon is located forward on the upper deck, and has a special dignity and elegance. It comfortably seats 170 passengers at tables for two, four and six persons. This room, which extends the full width of the ship, is finished with a low Mexican mahogany sunken panel wainscot with a paint finish above and overhead in light ivory tones. Ventilation grilles are fitted at the top of the side walls in intricate hand carved panels. The furniture is of Santo Domingo mahogany.

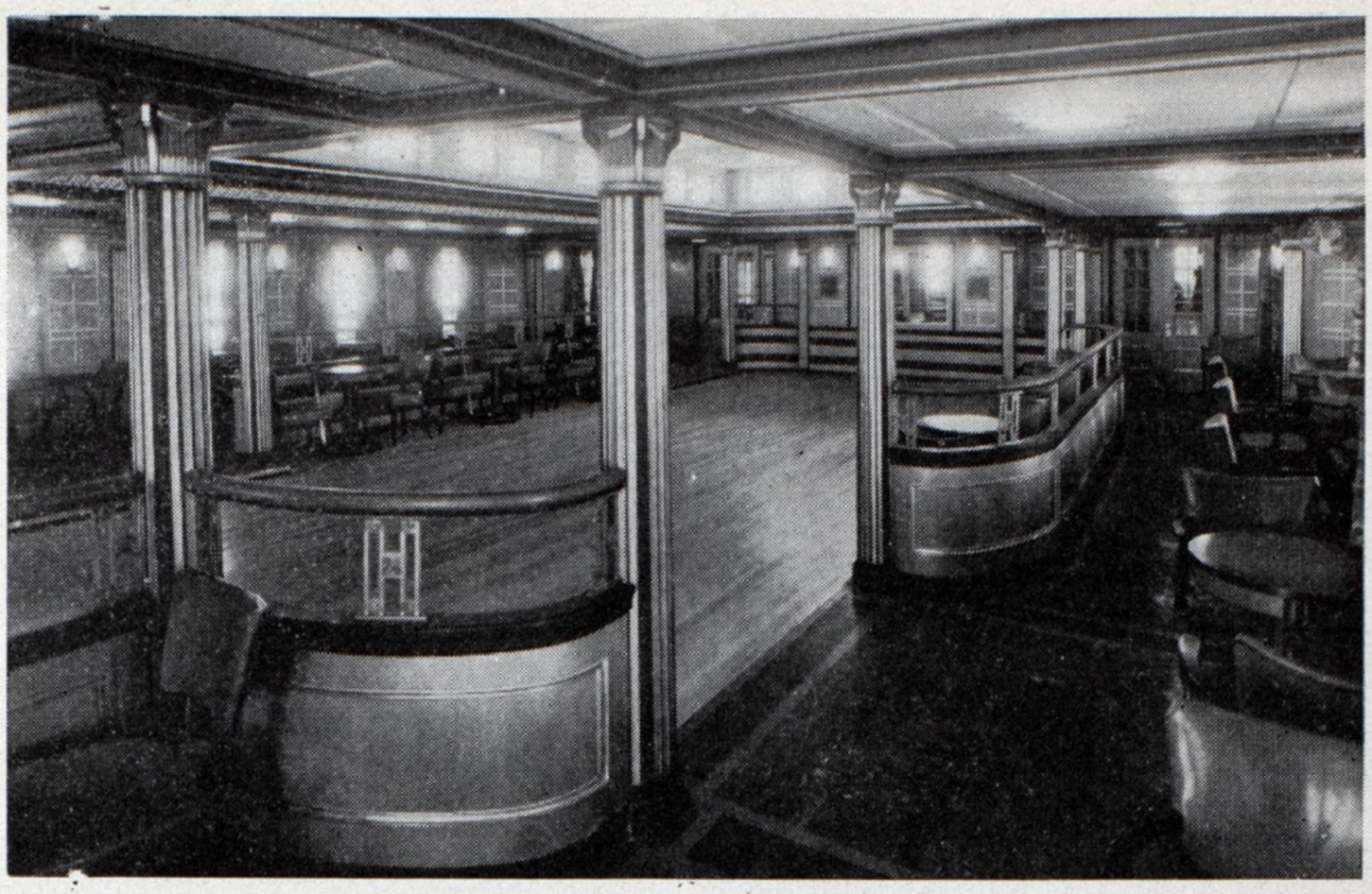
Ports are concealed behind sliding sashes of satin finish amber colored glass, and electric lights are fitted in back of the sash to illuminate them at night. Draperies are of a rich golden damask. Over the after end of the dining saloon there is a large light well, fitted with a transom sash, and a decorative leaded colored glass screen at the promenade deck level.

The dining saloon is directly connected with the main pantry. The main galley is located directly under neath the pantry on the main deck, and these spaces are fully equipped with the most modern cooking and food-serving appliances, most of which, including the ranges, are

S. S. Saint John, Spacious Main Entrance Lobby on Upper Deck

electrically operated. Allegheny metal is used quite extensively for the built-in fittings. The galley and pantry equipment was supplied by C. G. & J. W. Robinson, Newport News, Va.

The library and writing room is located at the forward end of the promenade deck house in the quietest possible place. The side walls are finished in cross matched panels of white mahogany with ebonized trim. The ceiling is painted. A bookcase is fitted at the after end of the room. The furniture, consisting of upholstered chairs, tables, and writing desks, is finished in Santo Domingo mahogany. The floor is completely covered with a soft carpet in green colored tones. Fourteen wall lights, and three overhead lights, provide ample lighting facilities.



S. S. Saint John, Ballroom and Veranda Terrace Cafe

Lounge and Music Room

The lounge and music room is located forward of the after stair hall on the promenade deck with a large light well over the center. A glass bulkhead is fitted at the after end in way of the stair hall. The walls are finished for the full height in diamond matched white mahogany panels with overhead ceiling panels of ivory painted plywood. A baby grand piano is located at the forward end of the room, while upholstered sofas, tables and chairs are conveniently placed around. Seating arrangement is provided for about 75 persons at one time.

The smoking room is located off the after stair hall and is comfortably and attractively furnished. The side walls are paneled to a height of 5 feet in straight grained white oak of a light weathered finish and above is a frieze of Zenitherm representing travertine following the general lines of the Elizabethian period of decoration. Considerable wood hand carving and compo ornamentation are used throughout the room. A beverage room is conveniently situated at the forward end of the room, with a private alcove adjacent on each side fitted with a large table and built-in seats.

A large light well is fitted over the center of the room, finished similarly to the smoking room itself, and fitted with fixed sash glazed with pale amber cathedral glass. Under the top of the dome there is an attractively colored leaded glass screen. A Chelsea clock of old brass finish decorates the after wall of the light well. The furniture is finished in white oak upholstered in red leather. Beautiful window drapes blend ideally with the color scheme of the room.

The ball room and veranda terrace cafe located just aft of the smoking room is an unusually attractive public space, a combination of a night club and veranda cafe. The large dance floor is located at the center of the space. The veranda terrace is raised slightly above the dance floor and separated from it by a colorful wood bulwark finished in alternate stripes of white birch painted silver grey, and macassar ebony.

The side walls are finished in a low wainscot of select white birch panels painted silver gray, with a trellis effect above painted in silver gray and pale green. Fluted columns, pilasters and upper trim are finished in contrasting colors of silver gray, dull red, and black. A raised orchestra platform is provided at the after end of the room.

A raised skylight dome with a transom sash of pale colored leaded glass panels on all four sides is fitted in way of the dance floor. The top of the dome is frescoed to represent the open sky. The room is lighted by an indirect system of flood lights in colors of red, white and blue, 206 in number, installed in a trough surrounding the well.

Casement windows extending unusually low are fitted at the after end of the room, and on each side, thus affording plenty of fresh air in warm weather and an unexcelled sea view. Large doors at the after end open on to an observation deck with a convenient deck seat around the stern.

Cargo Handling Arrangements

Four cargo ports, each 9 feet long by 7 feet 6 inches high are provided on each side of the main 'tween decks for receiving and discharging freight and autos. Five electrically operated freight elevators are provided for stowing the cargo below decks. The three large elevators have a lifting capacity of 6000 pounds in excess of their own weight, and the two smaller ones a lifting capacity of 3000 pounds likewise. Each of the elevators is capable of being raised and lowered with a full load at a speed of 100 feet per minute. The motors for the small elevators are rated at 25 horsepower each, and the large ones have two motors of 50 horsepower each, all the motors being of General Electric make.

The bulkheads between the cargo spaces on the main 'tween decks, and between the lower 'tween decks aft are fitted with large hinged watertight cargo doors to further expedite the handling of the cargo.

Painting and Floor Covering

The outside of the hull above the boot topping is painted black up to 3 feet 9 inches above the upper deck. Above this line, the superstructure is painted white, in general of Ripolin white enamel, except in way of the wheel house and navigating bridge where the wood is finished in its natural color and varnished. The smokestack is painted black with the owner's house flag painted thereon.

The floor covering, in general, in the public spaces, lobbies and passageways, consists of white marbelized rubber tile, with plain black borders, laid on a scratch coat of magnesite. The rubber tile was furnished by the Hood Rubber Co., Watertown, Mass. and laid by the shipbuilder. In the officers' and crew's accommodations the deck is covered with red colored magnesite with a finished surface. Magnesite was supplied and laid by J. L. Dobson, Philadelphia. White ceramic tiling is laid on the floor in all passengers' and officers' private and public baths, showers and toilets. Red rough quarry tile, 6 x 6 inches square, is laid in the galley, pantry and bakershop. Grover L. White, Norfolk, Va., furnished and laid the ceramic and quarry tile. All tiling is laid with a sanitary base. Stair treads and landing are covered with rubber, and fitted

with white metal nosings. In the smoking room where the magnesite forms the finished floor, it is laid in large squares with metal liners around each square, thus representing tile. In the center of the ballroom is a large dance floor made of tongued and grooved maple laid over the regular decking and finished with wax for dancing. Battleship linoleum is laid on the wood decking in the berth travel spaces.

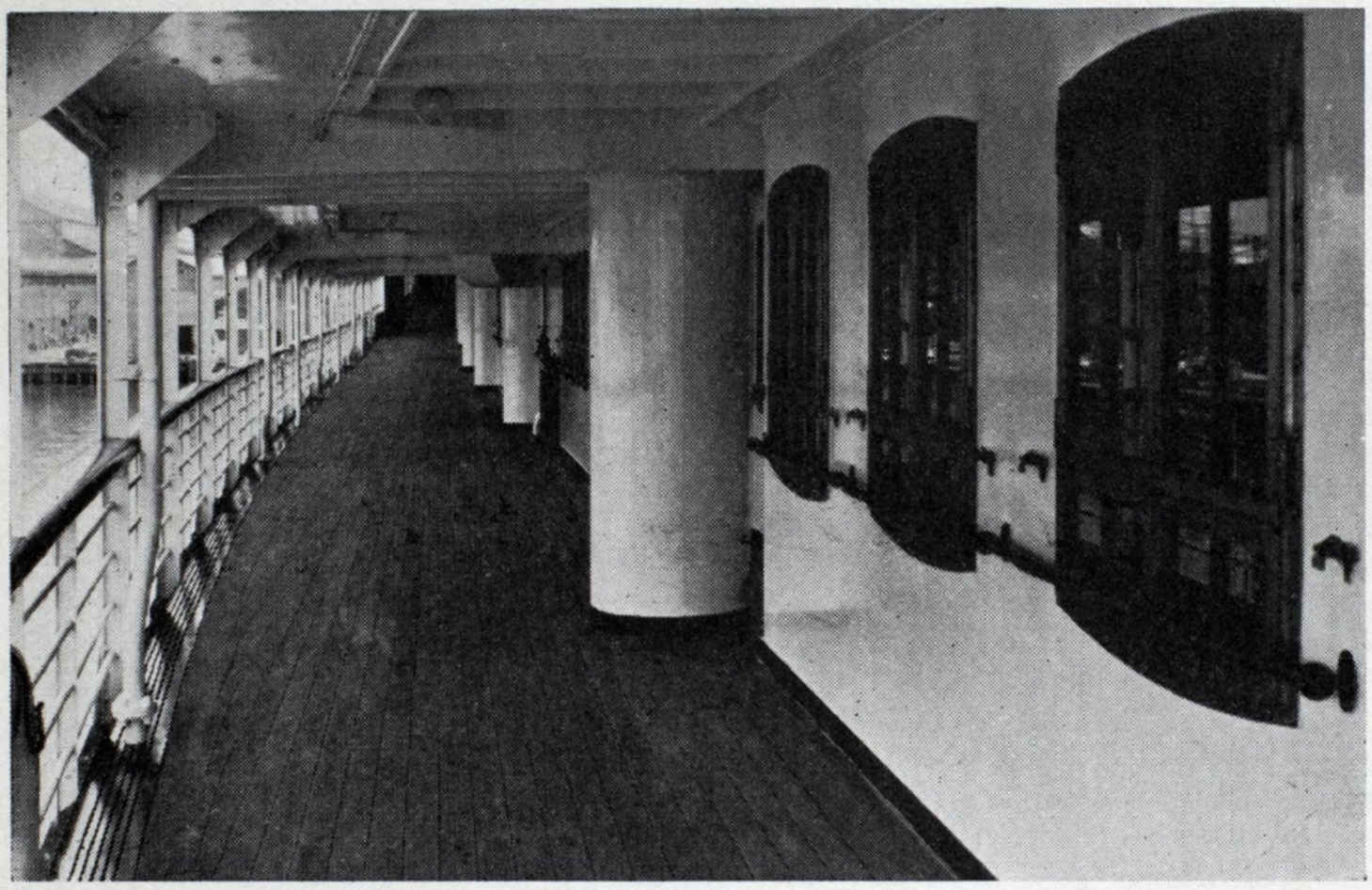
Lifeboats, Inclining Test

The SAINT JOHN is equipped with 20 metallic lifeboats supplied by the Welin Davit & Boat Corp., Lister avenue, Newark, N. J. There are 12 of the nested type 26 feet x 9 feet x 3 feet 3 inches, with a capacity of 50 persons each, 7 of the non-nesting type of the same size and capacity, and one metallic motor boat 26 feet x 8 feet 9 inches x 3 feet 8½ inches with a capacity of 37 persons. The total passenger carrying capacity of the lifeboats is 987 persons which allows a comfortable margin after everyone on board is provided for. The lifeboats are all stowed under Welin quadrant mechanical davits. Full equipment for off-shore ocean service is supplied for each lifeboat. In accordance with the provisions of the international convention for the safety of life at sea (1929), buoyant apparatus of sufficient capacity to take care of 25 per cent of the total number of persons carried on board is provided by 15 box floats 6 feet x 4 feet with a capacity of 16 persons each, which are also supplied by the Welin company.

Shortly before the sea trial the vessel was subjected to an inclining test to determine the position of the center of gravity of the equipped vessel, and as a check to assure ample stability for the vessel's safety. From the results obtained by this test, the vertical center of gravity was found to be 26.47 feet above the base line of the vessel, thereby giving the vessel a positive G.M. of 32.52 inches in the equipped condition, and ready for service, which is considerably in excess of ordinary requirements. The recommended initial stability for the vessel according to the formula approved by the American marine standards committee is a positive G.M. of 19.46 inches.

The method of conducting this inclining test by the Newport News Shipbuilding & Dry Dock Co. is of interest, as the vessel was inclined by means of two pieces of armor plate laid on a movable truck running on a track laid athwartships on the main deck in No. 3 hold. The total movable weight was 23.12 long tons which was shifted from side to side by means of tackles rigged to portable capstans specially placed on board for this purpose. Three pendulums were used, and a micrometer level developed by the builder was tried out for the first time. The results obtained by this instrument showed up so well that the builder will endeavor to use this micrometer level exclusively when conducting inclining tests in the future.

It is interesting to note that in the tonnage figures released by the United States customs authorities, the actual tonnage of the propelling machinery spaces including light and air amounts to 22.96 per cent of the gross tonnage, which is quite unusual for a vessel of the SAINT JOHN type and class. Of the gross tonnage amounting to 6185.46 tons, the under deck tonnage amounts to 4222.82 tons, the enclosures on the upper deck 1467.61 tons, and roundhouses, etc., 495.02 tons. The United States net tonnage is 3140 tons. Panama canal gross tonnage is 8787.93 tons, and net 6288.15



S. S. Saint John, wide Promenade, Glass Enclosed Portion Forward

Extensive precautions are taken to prevent and control fire. Two steel fire-resisting bulkheads, insulated with rock wool and fitted with hinged fire-resisting doors are located on the upper, bridge, and promenade decks, and one in the boat deck house adjacent to the main stairways to prevent fire working fore and aft through the accommodations. The doors were supplied by the Art Metal Construction Co., New York, and in many cases are designed to harmonize with the surrounding finish. Firemains, carrying water under pressure, are fitted throughout the ship, with hydrants installed in locations which permit all parts of the ship to be reached conveniently with short lengths of hose. In all, 49 hydrants are fitted.

For fire alarm and detection there is a Zonite automatic system with thermostats in every stateroom on board the ship, both passengers' and crew's. These thermostats give an alarm in the wheelroom when the temperature in any of the spaces reaches 135 degrees Fahr. and also locates the source of the alarm. A Lux fire extinguishing system is installed in the boiler and engine rooms, supplied by Walter Kidde & Co., and a Lux-Rich fire detecting and extinguishing system for the cargo spaces, paint and oil rooms, and similar spaces. A total of 54 cylinders of Lux carbon dioxide gas are utilized in the system.

Steam fire smothering lines are also fitted to all fuel oil tanks and to the paint and oil rooms. Two deck hand pumps with sufficient lengths of hose are also installed in conformity with the requirements of the United States steamboat inspection service. Hand fire extinguishers of the Foamite type are provided in the boiler room of 2½ gallons capacity, and 72 of the soda acid type, 2½ gallons capacity, are provided for the deck spaces. These portable fire extinguishers were supplied by Buffalo Fire Appliance Co.

Heating and Mechanical Ventilation

The living and operating spaces about the ship are mechanically ventilated on the supply and exhaust or balanced system. The supply system provides for a change of air every 5 minutes, except for the dining saloon where it changes every 4 minutes. The exhaust system provides for a change of air every 2 minutes for the galley and pantry, in the berth travel space on the lower deck aft every 5 minutes, and in toilet and other spaces, 3 minutes.

To accomplish this ventilation there are 18 supply fans and 9 exhaust fans of Westinghouse make, nearly all of which are located on the boat deck and on top of the boat deck house. Thermotank punkah louvres, which may be operated by the passengers themselves enabling

them to direct the flow of air or shut it off altogether, are fitted in the ceiling of the staterooms and suites connected with the supply system. In addition to these mechanical systems of ventilation each stateroom for both passengers and crew is fitted with a 10-inch Westinghouse electric oscillating bracket fan. The suites and public spaces are fitted with similar fans of a larger size. Certain spaces, such as toilets, baths, etc. are fitted with nonoscillating fans. In all, 461 electric fans are used. They are of the four-bladed latest marine type,

The SAINT JOHN is heated by steam throughout all passengers and crew's accommodations, public spaces, toilets and baths, wheel house, wireless room, storerooms, etc. The radiators are of cast iron of American Radiator Co.'s make and in general of the boxed-in type of "Corto" or "Peerless" design. Bronze grilles are fitted over the front of the radiators

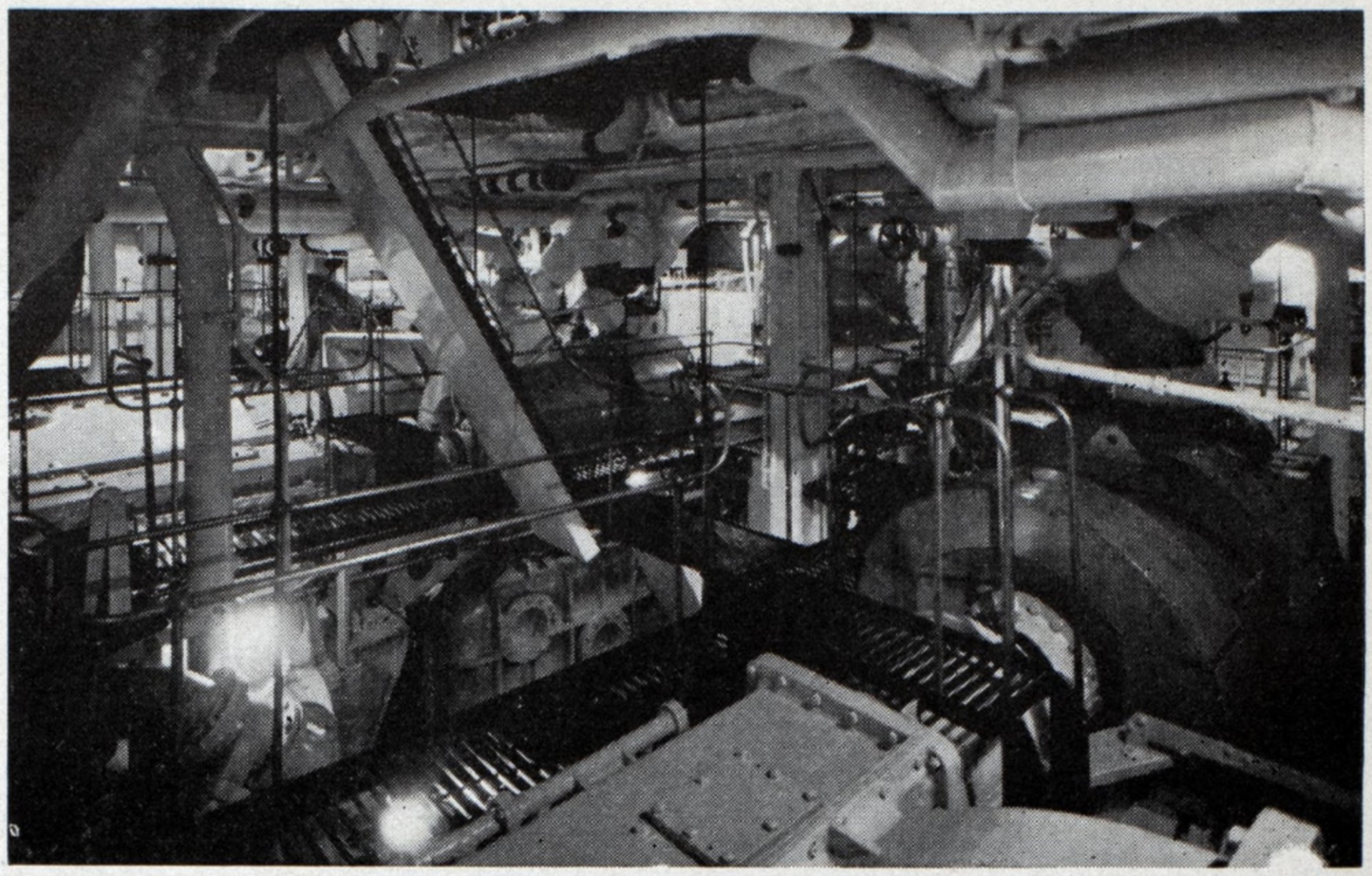
Electric Plant and Appliances

The electric plant is located on the flat at the after end of the engine room and comprises three 250 kilowatts General Electric generating sets which provide current for the extensive use of electricity on the vessel, which is used not only for lighting and mechanical ventilation, but in operating the windlass, capstans, freight elevators, power operated watertight doors, galley and pantry appliances, etc. A 12½ kilowatt motor generator has been installed to receive power from shore during a lay-up transforming it from alternating to direct current. An emergency generator, 20 kilowatts capacity, gasoline driven, has been provided in the wireless house on the boat deck house top for furnishing emergency lighting.

All light and power wire throughout the ship conforms to the requirements of the national electric code of America, and is concealed behind the joiner work in the accommodations. The total number of outlets for lights is about 2500. Nine large flood lights are provided on each side of the ship to give ample light for lowering away lifeboats at night. Berth lights are fitted at the head of each bed in the passenger staterooms and suites. There are two separate telephone systems, one for the passengers, and one for the ship's service of the loud speaking marine type.

For operating the radio and emergency lighting there are 60 type MVA-11 Exide cells, and for the interior communication system there are 44 type KXK-9 cells, all supplied by The Electric Storage Battery Co., Philadelphia.

The windlass, which is located at the forward end of the bridge deck, is of the electrically driven horizontal spur geared type fitted with two wildcats for handling the chain cable, and two high speed warping heads. The windlass is capable of hoisting simultaneously the two bower anchors each attached to 135 fathoms of chain cable while in 30 fathoms of water. The Westinghouse motor supplied with the windlass is equipped with a waterproof automatic full torque shoe type solenoid brake.



S. S. Saint John, Main Engine Room, Geared Turbines, Twin Screws

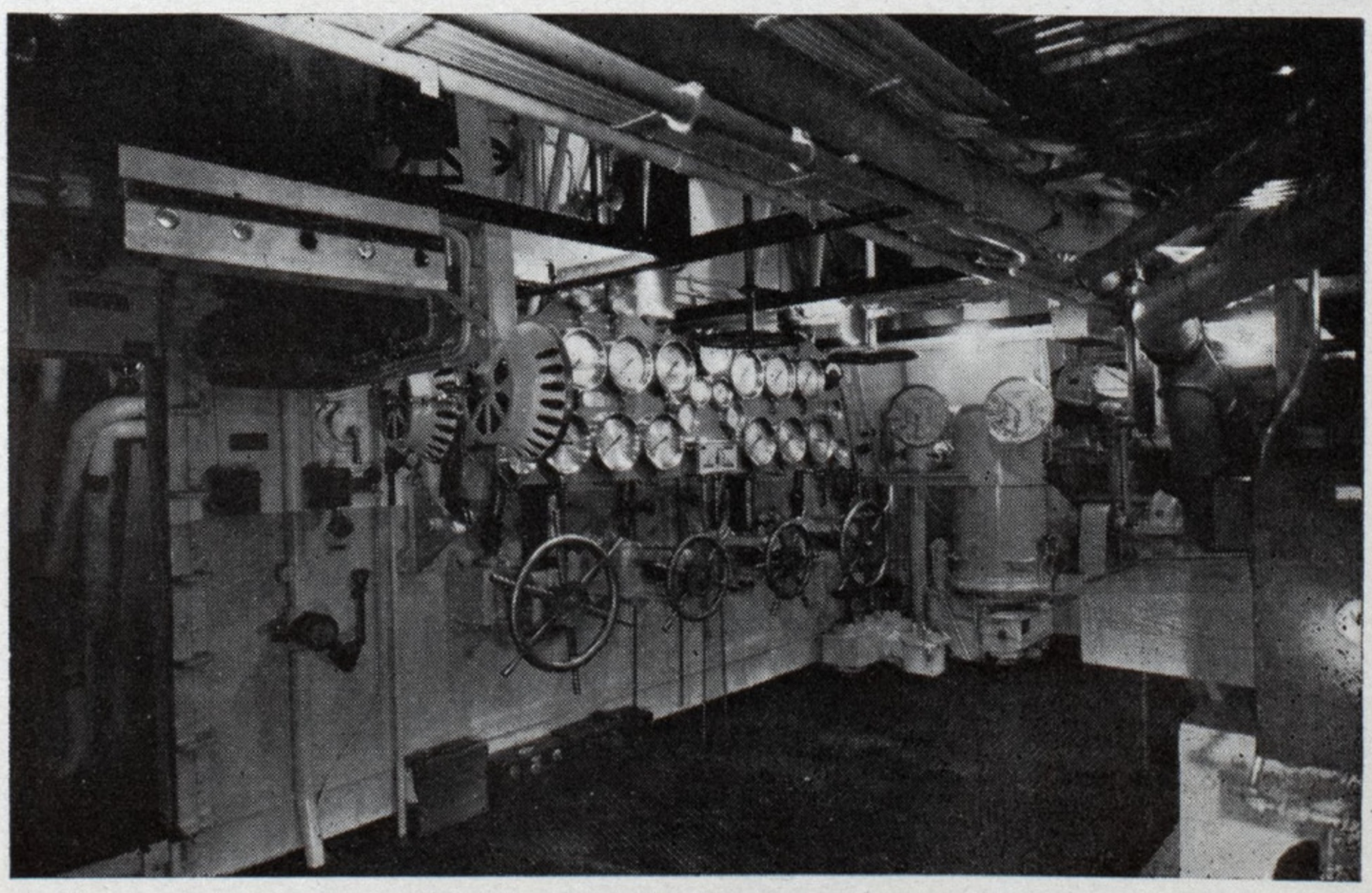
There are also two electrically driven reversible dock type gypsies, provided for handling the lines, one located on the bridge deck forward, and the other one the upper deck aft. The steering gear is of the hydro-electric type and is capable of putting the rudder from hardover to hardover, a total angle of 70 degrees in 20 seconds when the ship is moving ahead at a speed of 20 knots, with only one pump in operation. During the steering trials it was found that even this time was bettered. The steering gear, windlass, and gypsies were all supplied by the Hyde Windlass Co., Bath, Me. Rudder angle indicators were supplied by the Sperry Gyroscope Co., Inc.

A large Sperry searchlight of 30,000,000 beam candle power is installed on top of the wheel house, and also two Sperry incandescent searchlights at the outboard ends of the wings over the navigating bridge. The Sperry Gyroscope company also supplied the gyro compass oufits with repeaters at all steering stations and the gyro-pilot.

A complete radio broadcasting reception system of R.C.A. Victor company make is installed for receiving broadcast programs and distributing same through loudspeakers to the principal public spaces. The vessel is also provided with the latest type of radio compass (direction finder) as made by the Radiomarine Corp.

A coastwise type of Fathometer is supplied by the Submarine Signal Corp., Boston. By means of this remarkable instrument it is possible to know continuously the depth of the water over which the ship is traveling.

Engine and docking telegraphs were supplied by Charles Cory Corp., New



S. S. Saint John, Control and Gage Panel in Engine Room

York, and are of the 12-inch and 16-inch dial size. An electrically driven dumbwaiter is fitted to serve the main pantry on the upper deck, and the officers' and crew's messrooms on the boat deck.

The watertight doors in the machinery spaces and shaft tunnels are of the power-operated type, and can be opened or closed from a control panel located in the wheelroom when necessary, in addition to manual operation being provided at the doors themselves. An electrical horn or howler is installed at each door to sound a warning when the door is being operated and a system of red and green lights are also installed for the same purpose. The electrical equipment was provided by the Limitorque Corp., New York.

The vessel is fitted with two whistles, steam operated, supplied by the Star Brass Mfg. Co., Boston.

The fuel oil service tanks, and inner bottom tank No. 4 port and starboard are fitted with Actu-gages for recording the capacity of the fuel oil in these tanks at all times.

The wireless outfits consists of a transmitting and receiving set manufactured by the Radiomarine Corp., and is of 500-watt antenna capacity.

The ship's cold storage boxes are located on the main deck amidships adjacent to the engine hatch. There are six boxes with a total carrying capacity of 3400 cubic feet net. These are cooled by two 6-ton compressors of the ammonia type manufactured by the Brunswick-Kroeschell Co., and are electrically operated. The cold storage boxes are each fitted with a Taylor distant reading mercury actuated thermometer. The room which encloses the refrigerating machinery is fitted with gas-tight steel bulkheads.

Main Propelling Machinery

Propulsion is by twin screws actuated by two sets of single reduction geared turbines supplied with steam by four oil burning watertube boilers. Each set of turbines consists of one Newport News impulse high-pressure ahead, and one Parsons reaction low-pressure ahead turbine in series, each driving a separate pinion of a single reduction gear. Each set has its own condensing plant, thus making two complete units. Astern turbines of the impulse type are incorporated in the exhaust end of each low pressure turbine. The propelling machinery has a total designed rated shaft horsepower of about 9500 at 168 revolutions per minute. Over and above this 20 per cent excess power may be continuously maintained which gives about 11,400 shaft horsepower at 178 revolutions per minute. The backing power is equal to 60 per cent of the ahead power at 80 per cent of the ahead revolutions. The main gears are of the double helical, single reduction type, and were designed and built by the shipbuilder. Thrust bearings of the Kingsbury type are fitted at the forward end of both high and low pressure turbines to maintain correct axial adjustment of the rotors. The propeller shafts are of forged steel, the diameter being 3/8-inch in excess of the American Bureau of Shipping rules.

The fuel consumption of the machinery for all purposes, based on the horsepower of the main turbines only, was substantially better than the guarantee of .78 pounds per shaft horsepower per hour, with fuel oil containing 18,500 B.t.u. per pound.

The reduction gear bearings, turbine bearings, and turbine thrust bearings are lubricated by oil from a 1050 gallon gravity tank located in the engine hatch between the promenade and boat decks. Two lubricating oil settling tanks, and two storage tanks, of 600 gallons each, are also provided.

The two main condensers are located beneath the low pressure turbines so as to permit drainage direct from turbines to condensers. A vacuum of 28½ inches is maintained in each condenser with injection sea water at 70 degrees Fahr. and the turbines developing 11,400 shaft horsepower. Each condenser contains about 6100 square feet of cooling surface. There is one auxiliary condenser of about 1500 square feet of cooling surface located at the aft end of the engine room.

Propellers Solid, of Bronze

The propellers are solid manganese bronze, 12 feet 9 inches in diameter, 13 feet 9 inches pitch, each having three blades, the blade sections being of aerofoil streamline shape. The developed area is 61.5 square feet, and the projected area 51.65 square feet. Both propellers turn outboard when going ahead. They were designed and built by the Newport News Shipbuilding & Dry Dock Co. after considerable experimentation in determining the most suitable design. Hopkinson-Thring torsion meters are installed for determining the total horsepower developed by the propelling machinery. A combination telltale and revolution counter of Cummings make is also supplied.

Steam is supplied to the turbines from the boilers at 375 pounds working pressure with 210 degrees superheat, giving a total temperature of about 650 degrees. Incidentally, this figure marks the highest marine boiler pressure recorded to date in a vessel built by the Newport News Shipbuilding & Dry Dock Co., and is a forerunner of the high marine boiler temperatures to come. There are four Babcock & Wilcox marine type watertube boilers with interdeck superheaters, installed in two batteries of two boilers each in one fireroom. The boilers are fitted with Todd burners set fore and aft, and each boiler is fitted with forced draft for oil burning. The total water heating surface is about 29,136 square feet, and the total superheating surface about 3132 square feet. The maximum water evaporation per hour per boiler is 36,000 pounds. The capacity of the boilers is such that the ship under normal working conditions for power has practically a reserve boiler. Diamond soot blowers are fitted to each boiler. The smokestack is elliptical in shape with an inside and an outside stack, and is about 84 feet high above the centerline of the burners. Smoke indicators were supplied by the Boiler Room Improvement Co., New York. There are two electrically driven forced draft blowers which were supplied by the B. F. Sturtevant Co., Hyde Park, Boston.

Engine Room Auxiliaries

Engine room auxiliaries include three fuel oil heaters, two feed water heaters in two stages, two evaporators, a fresh water distiller, and two lubricating oil coolers, all supplied by Schutte & Koerting Co., Philadelphia. The air compressors are electrically driven, 8 x 6 inches, single stage, single acting, vertical duplex type, and were furnished by Ingersoll-Rand Co., New York. The motor driven lubricating oil purifier has a capacity of 200 gallons per hour, and was furnished by The Sharples Specialty Co., Philadelphia. The Paracoil fresh water heater is capable of heating 3600 gallons of water per hour from 40 degrees Fahr. to 160 degrees Fahr. The feed and filter tank is of about 2000 gallons capacity located on the port side of the engine room.

The following reciprocating steam pumps were furnished by the Worthington Pump & Machinery Corp., Harrison, N. J. of vertical simplex type. 1 main feed pump, 18½ x 13½ x 24 inches; 1 port and reserve feed, 15 x 9 x 24 inches; 3 lubricating oil, 8 x 10 x 12 inches; 2 fuel oil service, 6½ x 4½ x 12 inches; 2 fresh water, 7 x 8 x 12 inches; 1 evaporator feed, 4½ x 2¾ x 6 inches. Of vertical duplex type; 1 fuel oil transfer, 9 x 6 x 10 inches; 1 bilge, 7½ x 9 x 10 inches; 1 bilge and ballast, 10 x 12 x 12 inches; 1 emergency fire and bilge, 12 x 8½ x 12 inches. One turbine driven main feed pump. Also the following electric motor driven centrifugal pumps from the same manufacturer; 2 main circulating, 75 horsepower; 1 auxiliary circulating, 15 horsepower; 4 main condensate, 7½ horsepower; 2 auxiliary condensate, 5 horsepower; 2 fire and sanitary, 30 horsepower; 1 refrigerating condenser circulating, 2 horsepower; 1 hot fresh water, 2 horsepower; 1 scuttlebutt circulating, 2 horsepower; 1 emergency bilge, 11 horsepower.

The engineers' workshop is fitted up with a 13-inch lathe, 20-inch drill press, grinder, 14-inch shaper, and a grindstone. All are electrically driven,

and were supplied by the Smith-Courtney Co., Richmond, Va.

The navigating outfit on the SAINT JOHN, consisting of compasses, binnacles, sounding machine, etc. were supplied by T. S. & J. D. Negus, New York. The Chelsea Clock Co., Boston, supplied all clocks. Blocks used for rigging and boat falls were furnished by the Boston & Lockport Block Co., Inc., New York. Flags for the vessel were supplied by Dettra Flag Co., New York. Leaded glass for skylights was supplied by Leo Popper & Sons, New York. All compo ornamentation was provided and affixed by F. W. Kosack Co., Washington. Semon Bache Co., New York, supplied the mirrors. Canvas for joiner decks, awnings, weathercloths, etc. was furnished by Turner Halsey Co., New York. Illuminated signs for various spaces, of which there are 48, were furnished by The Frink Corp., Long Island City, N. Y.

Never before has any vessel received the popular welcome given the SAINT JOHN at Boston.

River Shipyard Completes Powerful Dredge

THE United States dredge CAPTAIN MERIWETHER LEWIS, recently completed by the Marietta Mfg. Co. at Point Pleasant, W. Va., is one of the largest dredging units on our entire river system. This dredge was designed by the marine design division of the office of the chief of engineers in collaboration wth the United States engineer office at Kansas City, Mo., for channel development and maintenance on the Missouri river.

The LEWIS is a suction dredge with steel hull and side wheel propulsion. The hull is 269 feet long overall, 50 feet wide, and 8 feet 6 inches deep at the sides; total width over the side wheel houses is 85 feet 9 inches. The draft in operating condition is 4 feet.

All of the hull and the framing of the upper works is of steel, while the deck house, cabin and pilot house are finished in wood.

The suction head is of the so-called "dust-pan" type because of its shape, and has an opening 36 feet in width and 9½ inches high, extending to 12 inches at the sides. Thirty eight 1½ inch jets in the head supply water under pressure to agitate the river bottom and enable the dredging unit to operate at maximum efficiency. Water is supplied to these jets by a 14 inch centrifugal turbine driven jet pump of a capacity of 6500 gallons per minute at a pressure of 50 to 60 pounds. This unit was built by the Elliott Co.

Powerful Dredging Pump

The dredging pump has a 36 inch diameter suction with 34 inch discharge, and the pump impeller is 82 inches in diameter. This pump is a special design developed by the marine design division, and is direct connected to and driven by an 18 x 29 x 47½ inch x 20 inch stroke vertical triple expansion steam engine of approximately 1400 horsepower, built by the American Ship Building Co. at Lorain, O.

Extending the full length of the hull the 34 inch discharge line from the suction pump discharges through a swivel elbow at the stern to a line of pipe carried on floating pontoons. The suction head is pivoted in a recess at the forward end of the dredge hull, and its elevation is controlled by the operation of a ladder hoisting winch with tackle and a chain bridle slung from a structural steel "A" frame at the head of the dredge.

Movement of the dredge while in operation is controlled by two large hauling winches each of a pulling capacity of 60 tons. These winches haul on two head lines made fast to anchor piles set several hundred yards upstream from the dredge. These anchor piles are carried on pile shears at either side of the dredge forward, and are jetted into position in the river bed by water under heavy pressure furnished by a pump on the dredge. The hauling winches were built by the American Hoist & Derrick Co. while the ladder hoisting and spud winches, as well as the steam capstans, are products of the American Engineering Co.

Side Wheel Propulsion

Side wheels for propulsion are 25 feet in diameter and 13 feet 6 inches long with eighteen 36 inch buckets each. These wheels are driven by a set of Marietta Mfg. Co.'s piston-poppet valve type tandem compound engines with 20 inches diameter high pressure and 40 inches diameter low pressure cylinders, and a common stroke of 7 feet.

The boilers, two in number, are of the sectional header watertube type built by the Foster Wheeler Corp., fitted for oil burning with Ray oil burning equipment. These boilers have a total heating surface of 9100 square feet. They are built for a steam pressure of 250 pounds per square inch, and are capable of generating 45,000 pounds of steam per hour. Fuel for the boilers is carried in compartments in the hull.

Practically all of the power units are equipped to operate condensing. The dredge pump engine, as well as the propelling engines and jet pump turbine, all exhaust into a two-pass surface condenser, while the auxiliary machinery exhausts into a smaller condenser of the same type. Main condensing equipment was furnished by the Foster Wheeler Corp., and the auxiliary condensing unit by the C. H. Wheeler Co.

The electric plant consists of two Troy-Engberg direct current generating units, one of 15 kilowatts and one of 20 kilowatts capacity.

Boiler feed, evaporator feed, fire, sanitary, and other small steam piston pumps are all of vertical type built by Union Steam Pump Co. The bilge pump is an 8 inch centrifugal direct connected to an 8 x 8 inches vertical single cylinder steam engine built by Worthington.

There are two rudders of steel plate construction operated by a Marietta steering gear of ram type with 8½ inches diameter steering engine of 6 feet 7 inches stroke.

On the main deck aft is a complete work shop equipped with motor driven lathe, shaper, radial drill, pipe cutting machine, emery and drill grinder, and a blacksmith forge. With this equipment practically all minor repairs will be made on board.

Large meat and vegetable storage rooms are refrigerated by a direct expansion type ammonia plant built by the Vilter Mfg. Co., Milwaukee, Wis. In addition to these refrigerating rooms an 18 cubic feet Frigidaire electric refrigerator is installed in the pantry.

The cabin provides very comfortable accommodations for the dredge crew of 60 persons with every modern convenience in the way of lighting, plumbing, heating, and a complete laundry plant electrically equipped. In the galley are two 5 feet double oven oil burning ranges manufactured by Elisha Webb & Son, Philadelphia. An electric coffee urn, is provided.

Pass All Tests Successfully

In exhaustive tests on the LEWIS the machinery and equipment met every requirement. The propelling engines developed upwards of 1600 horsepower at a low rate of steam consumption, driving the dredge at a speed of ten miles per hour in pool water. The dredging unit is capable of dredging 2500 yards of river bottom per hour. The boilers met all requirements for steam generating capacity and efficiency.

The United States dredge CAPTAIN WILLIAM CLARK, a duplicate of the LEWIS being built under the same contract, is rapidly nearing completion. It will undergo its tests in the next few weeks and go in service on the Missouri river in June.

Permit New Haven R. R. to Operate Ship Lines

The interstate commerce commission on July 10, 1918, acting under authority of the Panama canal act, gave permission to the New Haven railroad to operate vessels on Long Island sound. At that time there were a number of independent companies. The railroad has operated its steamship services in the name of its subsidiary, the New England Steamship Co., which during this period acquired the New Bedford, Martha's Vineyard & Nantucket Steamboat Co. and the lines of the Hartford & New York Transportation Co.

In March, 1930, the Colonial Navigation Co., an independent line asked for an investigation of the practices of the New Haven and its subsidiaries, claiming that the restoration of passenger service by that company on its Providence line was illegal; that publication of "any classification" carload rates between Providence and New York was contrary to the Panama canal act, and also complained of certain other matters.

The interstate commerce commission has now made its findings and the New Haven has won. Specifically the commission authorized continued operation of the six lines of the New England Steamship Co. between New York and Bridgeport, New Haven and New London, Conn., Providence, R. I., and Fall River and New Bedford, Mass., and between New Bedford and Woods Hole, Mass. and the islands of Nantucket and Martha's Vineyard.

The LEVIATHAN, flagship of the United States lines fleet, will from now on dock at pier 59 North river instead of pier 86 North river. Using pier 59 for the LEVIATHAN instead of the West Forty-sixth street pier will concentrate all of the operations of the Roosevelt company at the Chelsea piers, which extended from Seventeeth to Twenty-third streets along the Hudson river. The LEVIATHAN is due at New York on June 3 and will make her first departure from pier 59 at midnight June 7.

Heads New Association

On May 20 Fred A. Bishop, president of the Iron Steamboat Co., well known excursion boat operator in New York harbor, was elected president of the recently organized Passenger Steamboat association of New York.

The new association includes in its membership the Hudson River Day line, Iron Steamboat Company of New Jersey, McAllister Navigation Co., Delaware & Hudson Steamboat Co., Meseck Steamboat Co., Goodwin Steamboat Co., Excursion Steamers Inc., Lower Hudson Steamboat Co. and Mills Brothers.

Until the formation of this association there was nobody to represent the excursion boat operators of New York harbor who annually carry many millions of passengers. The new association will try to bring about a closer co-operation among its members and to maintain the existing good will. F. W. Luckmeyer was elected secretary and treasurer of the new organization.

Sea Travel Increases

It is encouraging to note that for the first time in many months there are now indications of an improvement in North Atlantic steamship travel. The authority for this statement is David Lindsay, assistant passenger agent of the Roosevelt and I. M. M. lines.

Mr. Lindsay said recently: "The largest increase in bookings is in the tourist class. With our lines which include the United States, White Star and Red Star the number of passages booked in the tourist section in the week of May 8 was 1000 above the same period in 1931. The third class is also increasing and the first class is beginning to hold its own, which is a good sign.

"We are doing very well with the LEVIATHAN which sailed on May 17, going out with more than 200 first, about 350 tourist and 450 third class. The bookings for Queenstown in the United States lines and the White Star ships are good in all classes."

A pilot in New York harbor for more than 50 years, Capt. Henry C. Johnson, retired, died on April 25 at his home in North Stamford, Conn., at the age of 73.

T.V. O'Connor Reappointed

President Hoover on May 6, reappointed Chairman T. V. O'Connor to the United States shipping board for a term of six years from June 8, when his present term expires.

His reappointment has been very favorably received in all quarters. He has demonstrated exceptional qualifications for the office he holds. It is no longer a political appointment. It is a deserved reward for merit. By this action he has the unusual honor of having been sponsored by three presidents, Harding, who originally appointed him in 1921; Coolidge, who reappointed him in 1926, and now President Hoover. He has served as chairman of the United States shipping board since 1924, and before that as commissioner since his appointment in 1921. He is therefore in point of service the oldest member of the board.

Barge Canal Opposes Cut in Railroad Rates

Business on the New York state barge canal is showing a substantial increase over a year ago and the canal bureau of the state wants to maintain and continue this increase and is therefore taking steps to prevent any railroad discrimination in rates on grain and coal.

For the first week of the 1932 navigation season ending April 30, traffic on the canal amounted to 122,-979 tons an increase of a little over 37 per cent above the corresponding week in 1931. In this commerce on the canal are included molasses, canned goods, rubber and heavy oil cargoes moving westbound, with large eastbound movements of grain beginning as the week ended.

The canal bureau announced that it was entering a protest with the interstate commerce commission against proposed rail rate reductions on wheat and coal which it feels are discriminatory against the canal. Colonel F. S. Greene, superintendent of public works of the state of New York said the railroads planned to offer low grain rates which would be discontinued at the close of the canal season. Protest was also made against a proposed rail rate schedule which it said would discriminate against coal shipments intended for movement through the barge canal. This proposed schedule on coal, the bureau said, called for a rate of $1.89 a ton from the Cumberland and Piedmont fields of West Virginia to Fairport on Lake Erie and thence to be forwarded by ship to upper lake ports whereas for coal transported by boat from Fairport to barge canal points in New York state the charge for the same movement would be $2.30 a ton.

There are now ten fast motorships on the barge canal, an increase of four over last year due to increase in traffic. These motorships are engaged in carrying general cargo.

Baltimore to Bermuda

Bermuda continues to grow in popularity; the number of visitors is steadily increasing. To meet this demand the Clyde-Mallory lines will establish a weekly passenger service between Baltimore and Bermuda, sailing from Baltimore Saturdays, beginning June 25, according to an announcement by J. E. Craig, first vice president of this company, which is one of the oldest and best known of American coastwise services.

The fine new turbine steamship SHAWNEE is favorably known for her luxurious accommodations and superior facilities to many cruise passengers on her New York-Canadian midsummer cruises.

Captain Robert Dollar
1844—1932

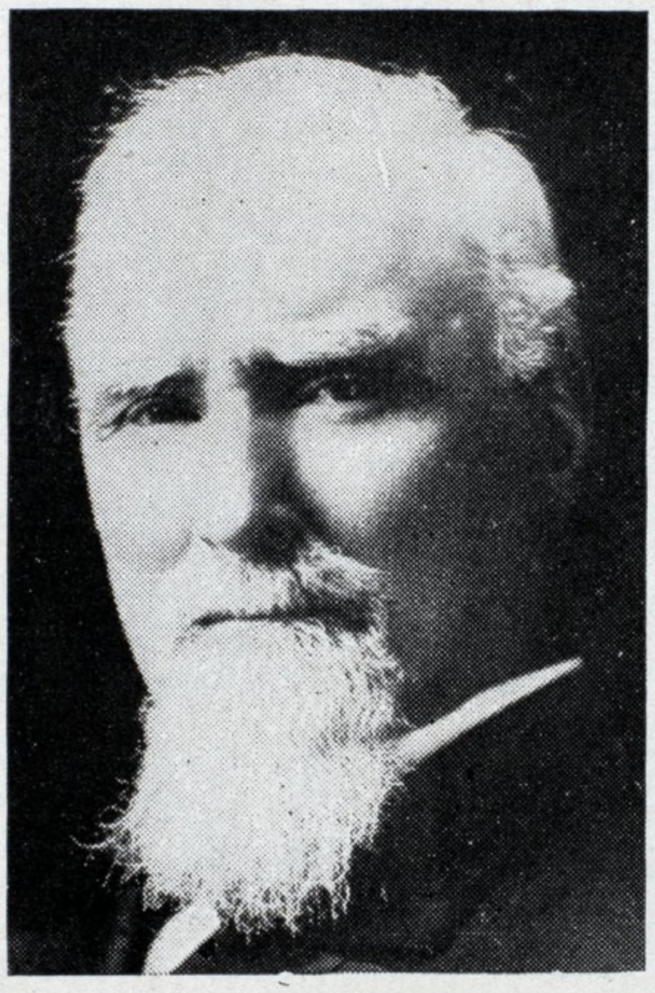
THE most illustrious of American shipping men, Captain Robert Dollar, is dead in the eighty-ninth year of his life. Only a short time before announcement of his death, his doctor reported that he had "weathered another storm." But it was not to be. He died at his home in San Rafael, Calif., early in the morning, May 16, of pneumonia. No other individual has done as much for the prestige of the American merchant marine. He was truly the "grand old man" of American shipping and was equally respected abroad and at home. He won and retained the confidence of political and business leaders the world over. In China, whose vast potential power he fully appreciated, his word was as good as his bond.

Around his name gathers naturally the glamour and romance of a great leader. In a real sense he never submitted to defeat. Some of his greatest accomplishments came at an age when most men are content to sit idly by. Practical common sense combined with an iron constitution, driving energy, superb courage natural humor and reasoned optimism carried him on through tasks weaker men called impossible. In his eighty-seventh year he made his thirty-seventh business voyage to the Far East. He lived actively with good sense and unfaltering courage to the end.

On Jan. 5, 1924 he initiated the round-the-world service of the Dollar line with seven of the President ships purchased from the United States shipping board. A venture which in the ensuing years has proved sound and profitable but at the time was looked upon as foolhardy in the extreme, an invitation to disaster, by many old experienced shipping men. Early in 1925 five additional President ships in the transpacific service were acquired from the shipping board. To cap his career and as an earnest of confidence in the line he had founded, an award was made of transpacific United States mail contracts in September, 1928, shortly followed by the beginning of plans for the building of the two largest and most luxurious American passenger vessels up to that time, the PRESIDENT HOOVER and the PRESIDENT COOLIDGE, both of which he was to live to see enter service in 1931.

Beginning as a kitchen flunky in a lumber camp in Canada and ending his career as chairman of the board of the largest steamship fleet carrying the American flag, the career of Captain Dollar is a true modern epic. He was born in Falkirk, Scotland, March 20, 1844. He was 14 when his father brought his family from Glasgow to Quebec on the sailing ship ANGLESIA, a passage taking five weeks. He had begun working two years before this time, feeding a lathe in a machine shop for which he received sixty cents a week. He continued his daily activities to within a few weeks of his death, so that his working life spanned a period of 77 years He himself has said:

"Within my recollection the first Atlantic cable was laid; the telephone was introduced; wireless has been developed; improvements in the use of steam have been very great; the propeller has been perfected and superseded the paddle steamer.



"These are great changes but young men now living will survive others on a vaster scale, involving the commercial and industrial development of countries where the surface as yet has been little more than scratched.

" From 1858 when I secured a job in a Canadian lumber camp at $10 a month until 1888, I was continuously engaged in the lumber business in various parts of Canada and Michigan. By the late eighties' good, large timber was getting scarce in Michigan, so I moved to California. In 1893 I started a mill in Mendocino county on the Pacific slopes of California and ran it for six years. During this time I found it very difficult to get vessels to carry our lumber. I started investing in vessel property.

"It was not until 1901 that I made my first venture in the China trade. I began by buying a 6500-ton steamer. At that time the lumber was being carried to Japan and China in slow sailing vessels.

"We soon found if we intended to stay in the business we would have to furnish our own cargo. Consequently I bought other saw mills and thereby provided our ship with a full cargo westward. I also found that if we were to maintain the line we would have to have an organization at both ends, so in July, 1902 Mrs. Dollar and I sailed for our first trip to the Orient.

"We visited both Japan and China. I carefully looked over the field, and opened a small office in Shanghai.

"I discovered that a ship sent to the Orient became a drummer for trade, not only for the goods that she carried there but for a cargo for the return trip. The growth of our business is but a part of general advancement of the Pacific coast. Eighty years ago (this statement was made in 1927). The Western coast of the United States was a wilderness with only a scattered population of a few white men; less than fifty years ago the first steamship crossed the Pacific ocean from America to China. Tonnage has increased by leaps and bounds and I believe that within a few years the tonnage of the Pacific will exceed that of the Atlantic.

"Leaving all the rest of China out of the picture, let me suggest briefly the wonderful richness and resources of the land bordering the Yangtse river and its tributaries, running through the rich heart of China. Roughly one-seventh of the human race dwells there. Like the Nile, the Yangtse is a great silt-bearing stream which overflows yearly and furnishes the lands with rich growing soil. One sails up the river for 1600 miles through cities containing millions of population I do not hesitate to say that I firmly believe the Yangtse river valley will yet be the greatest steel producing country in the world."

"Foreign trade," he said, "is not a subject narrowly confined to one group of interested individuals. The people concerned are many. If carried on properly, foreign trade is only an exchange of commodities. It is necessary to buy in each country as much or nearly as much as is sold there.

"My ships carry the American flag. I feel in doing business under another flag, like the man who is doing business under his wife's name. I have given my promise that I will continue to do all that I can to keep them under the American flag."

And so passes the grizzled veteran of American shipping, a man devoted to his home and to his country, an example and an inspiration to the youth of the land. Of such stuff are great nation's made.

Albany is Now an Ocean Port
Formal Opening in June

OPENING of the Port of Albany to international trade will be celebrated June 6 and 7, at Albany, N. Y. This is the newest Atlantic seaport, situated 143 miles north of New York bay at the head of deep-water navigation in the Hudson river.

It is not only one of the most interior ocean ports of the United States but the one nearest to the Great Lakes. Albany is the eastern gateway of the New York state barge canal system, whose channels with those of the Great Lakes, form a continuous water route extending 1500 miles directly into the Middle West.

President Hoover, his cabinet, members of congress, the foreign diplomatic corps, governors of all the states, the governor general of Canada and other public leaders have been invited to the formal dedication. Industrial leaders also have been invited, including Henry Ford, Charles M. Schwab, Owen D. Young, as well as American and foreign steamship owners and operators, railroad executives, manufacturers and traffic men throughout the country.

In 1925 President Coolidge signed the bill allocating $11,200,000 for the deepening of the upper reaches of the Hudson river to Albany to a depth of 27 feet at mean low water, and the present world port has been in actual operation on full draft since June, 1931. Due to the range of tides, the depth for navigation is increased three to four feet. The channel will accommodate approximately 90 per cent of all ships afloat.

While the federal channel was being completed, nearly 200 ocean vessels arrived at Albany from the Atlantic. In five months after full draft was secured, 77 ocean vessels reached the port. Direct trade has been set up with the Pacific coast, Europe, Baltic ports, West Indies, Gulf and South Atlantic ports, and with the Canadian Maritime provinces.

Port Facilities Established

During the construction of the federal channel, the Albany port district commission, under a $10,000,000 program has developed the port facilities so that it is now an established trade center. Nearing completion is a 13,000,000 bushel grain elevator, the largest single unit grain elevator in the world. It has been constructed in response to the demands of grain interests in the western grain belt and 10,000,000 bushels of this capacity has been leased to the Cargill Elevator Co. of Minneapolis.

Loading capacity of the elevator is at the rate of 125,000 bushels per hour into ocean vessels, with unloading from canal boats at a speed of 50,000 bushels per hour. The elevator is capable of handling upwards of 150,000,000 bushels of grain yearly.

This elevator will go into service in June, thereby establishing Albany as one of the principal grain export harbors of the nation. This port enjoys a naturally longer navigation season than the St. Lawrence river ports, and has the further advantage of being but one night's run from New York harbor, where vessels are constantly available to all world ports. With the use of an ice breaker, the port will be kept open throughout the year.

In North Atlantic Range

Albany has been made a port of the North Atlantic range so that it enjoys the same ocean rate to and from Europe as other harbors of the Atlantic seaboard between Maine and Virginia. This enables the shipper to reach the interior at the shortest rail or water haul on the continent.

The Hudson river distance also is absorbed by vessels in the intercoastal trade, and four steamship lines are now active in the trade between Albany and the Pacific coast, ports between San Diego and Tacoma, Wash., via the Panama canal. In addition to grain, the port has an outstanding position in lumber, which arrives from the Pacific northwest.

The existing balance of trade on the New York barge canal, which carries an almost equal flow both east and west, indicates the ability of the Port of Albany to serve the Middle West centers.

Shipments are regularly being made through the port to more than 100 New York state points, as well as into New England, Canada, the Middle West and Great Lakes points such as Cleveland, Toledo, Detroit, Milwaukee and Chicago. Many household articles are carried as well as food supplies and heavy manufactures. A large amount of canned goods is brought in from the Pacific coast by ship to Albany, thence by rail, canal boat or truck to destination.

Albany was the original railroad center of New York state and is today the focus of six railroad systems, having national and Canadian distribution. Railroad yards in the port zone have a capacity of 20,000 cars daily, and the yearly interchange between the systems is over 1,000,000 freight cars. Facilities at the docks include transit sheds, warehouses, open storage, a huge lumber terminal, water supply, fire protection and 25 miles of port railroad switching and classification trackage.

The John Strachan Co. Inc. has moved into new quarters at 75 West street, New York city. Members of the company are: J. F. Paige and C. Strachan.

The Superior Iron Works Co., Superior, Wis., announces the expansion of its marine auxiliary equipment to include the manufacture of electric steering gears, electric mooring winches, cargo winches, windlasses, capstans and gypsies, propulsion controls, and rudder indicators.

This department will be under the direct supervision of A. A. Johnson, well known designer of marine electrical equipment.

Canada's Far Northern Port to Ship Grain and Cattle

Churchhill, Man., Canada's most northerly seaport has ended its long winter hibernation and is bustling with activity again. The townsite, owned by the Manitoba government and the port, built and operated by the Dominion government, are both to be opened this summer. Steel workers are erecting new conveyors to carry the grain from the elevators to the ships in anticipation of grain shipments through the port to Europe in the fall. In a few weeks dredging of the harbor will be continued.

Last fall two test shipments of grain were sent through Churchill to Liverpool. Both arrived safely and in fast time and this is accepted as proof that the route through the bay and straits to Europe is a perfectly satisfactory salt water lane. It is considered likely that an endeavor will be made this summer to ship cattle through Churchill for Europe, an experiment, which if successful, will, it is believed, allow Canadian cattle to reach the British market in good condition and more cheaply than through established eastern ports.

Error is Corrected

The twin screw diesel tug MAMO, built at the Union plant of the Bethlehem Shipbuilding Corp., San Francisco, for Young Bros., Ltd., Honolulu, is fitted with a Sharples centrifuge for oil purification, correcting an error made in crediting this equipment to another company in a description of the MAMO as one of the distinctive ships in the April MARINE REVIEW.

William H. Todd Dies 1864—1932

IN THE death of William H. Todd, the shipbuilding and ship repair industry of the United States loses one of its most outstanding and successful men. He had been ill for some time but the immediate cause of his death was an accidental fall at the home of his son, J. Herbert Todd, Brooklyn, N. Y., on May 15. He was 67 years old. For many years he had been president of the Todd Shipyards Corp., one of the world's largest ship repair and shipbuilding organizations, with headquarters in New York and with two plants in Brooklyn, N. Y., one in Hoboken, N. J., and a plant in each of the following ports: Mobile, Ala., New Orleans, Seattle, also a branch, Todd Oil Burners, Ltd., in London, England.

He was not only a thoroughly practical shipbuilder and ship repairer but also a successful organizer co-ordinating widely diversified activities into a smooth functioning efficient unit peculiarly sensitive to his control and direction. Expansion of facilities of the various plants and selection of their sites was based on a constant effort to keep ahead of immediate demand and to be thoroughly prepared to do the most difficult work in the quickest possible time at a reasonable cost. His business foresight was closely paralleled by an unusually close and harmonious human relationship with all his co-workers from riveters to directors.

More than 53 years of his life was spent in building and repairing ships, beginning as a boiler maker's apprentice. He was an inventor and philanthropist. Born in Wilmington, Del., Nov. 27, 1864, the son of a shipyard foreman, he attended school in that city until he was 13, when he became a newsboy on a Philadelphia and Baltimore train. At the age of 14 he went to work under his father at the Pusey and Jones shipyard in Wilmington, advancing in turn to riveter, ship fitter, molder, and master mechanic; then assistant foreman of the yard at the age of 22. When the yacht VOLUNTEER, which was later to win for America the international cup race, was building at the yard he was placed in direct charge of her construction. It was here that he established one of his first records for doing work quickly. The VOLUNTEER was completed in one month from the time of laying the keel.

Four years later he won an appointment as master ship fitter in the Brooklyn navy yard. In 1895 he became iron worker's foreman for the John N. Robins Co., Brooklyn, N. Y.; then assistant plant superintendent and three years later vice president and general manager. When Mr. Robins retired in 1909, Mr. Todd at the age of 45 became president.

In 1911 the Robins Dry Dock & Repair Co. was organized to succeed the original company with Clyde interests in control. Four years later the company was offered for sale to an English buyer for $7,000,000. It was then that Mr. Todd stepped in and with 100 of his fellow workers formed the Wm. H. Todd Corp., buying the property on a long time installment plan. In

1916 he formed a new company, the Todd Shipyards Corp. and acquired the Tietjen & Lang Dry Dock Co., Hoboken, N. J., the Seattle Dry Dock & Construction Co., Seattle, and the old Quintard Iron Works, New York.

The new corporation proved a success from the start and during the World war with its various yards expanded, it took a leading part both in shipbuilding and ship repairing.

Other plants have been added since, including the Todd Shipbuilding & Dry Dock Co., Mobile, Ala., and the Todd Engineering, Dry Dock & Repair Co., New Orleans. In 1929 the company opened the largest privately owned graving dock in the New York district at the Robins plant in Brooklyn.

Mr. Todd contributed much to the development of equipment for the burning of fuel oil and pulverized coal.

Commenting on Mr. Todd as a leader in industry Charles M. Schwab, once said: "Todd is a human dynamo, a man among men, who does things and whose life is a record of achievement." That might well serve as the epitaph of a great leader, a man of many talents but withal very human and well beloved by his fellow men.

William H. Baker Dies

A CAREER of accomplishment and promise for the future was cut short by the untimely death of William H. Baker, president of the Merritt Chapman & Scott Corp., New York, one of the largest firms in the world engaged in salvage and waterfront marine construction. He died suddenly of heart disease after an illness of only a few days at his home in Montclair, N. J., on May 14, at the age of 52.

Mr. Baker was born in Philadelphia and was graduated at Cornell university in an engineering course in 1901.

At the time of his death he was also a director of the North American Cement Co. and of the United Dry Docks, Inc. In addition to heading the American company he was president of affiliated companies in Montreal and Quebec.

He is survived by his widow, two sons and two daughters. He was a member of the Engineers club in New York.

Admiral W. S. Benson Dies

ADMIRAL William S. Benson, former chairman of the United States shipping board, and chief of naval operations during the World war, died suddenly at his home in Washington at the age of 76.

On reaching the age of 64 on Sept. 25, 1919, Admiral Benson was retired from active service in the navy. In March of 1920 President Wilson appointed him chairman of the shipping board which position he held until June 8, 1921 when he was succeeded by Albert D. Lasker. While chairman of the shipping board he also served as president of the Emergency Fleet Corp. After retirement from these offices he was appointed shipping board commissioner for the Atlantic coast section and continued to serve in this capacity until June 8, 1928.

One of the outstanding services of Admiral Benson as shipping board commissioner was his efforts in connection with the use of the diesel engine in the merchant Marine.

An unusual honor was paid to him by an act of congress June 21, 1930 giving him the rank of a full admiral on the retired list.

Sandy Hook Re-enters Service After Elaborate Rebuilding

OUT of the Staten Island plant of the United Dry Docks, Inc. comes the famous SANDY HOOK, speedy passenger vessel of the Central Railroad Co., of New Jersey, for service between Manhattan and North Jersey shore points. After elaborate rebuilding this historic vessel is now better suited than ever before for the comfort, convenience and pleasure of passengers. Plans for her rebuilding were prepared by George G. Sharp, naval architect, New York City. Her initial trial inspection trip was held on May 17.

Eleven Staterooms Forward

In rebuilding the SANDY HOOK a thorough job was done. She was damaged by fire sometime ago while tied up at her winter quarters, Jersey City, N. J. The original machinery had been little damaged by the fire and was not renewed, but it was given a complete overhaul and placed in first class working order. The hull itself (probably of iron) was found to be in excellent condition. From this point up however the ship is entirely new. Her trim lines give her a yacht-like appearance. One of the features is the originality of the layout of all the public spaces. Larger and more convenient deck space has been provided. The observation and the after section of the saloon deck are open, while the remainder of the deck space is glass enclosed like the the promenade deck of a modern ocean liner.

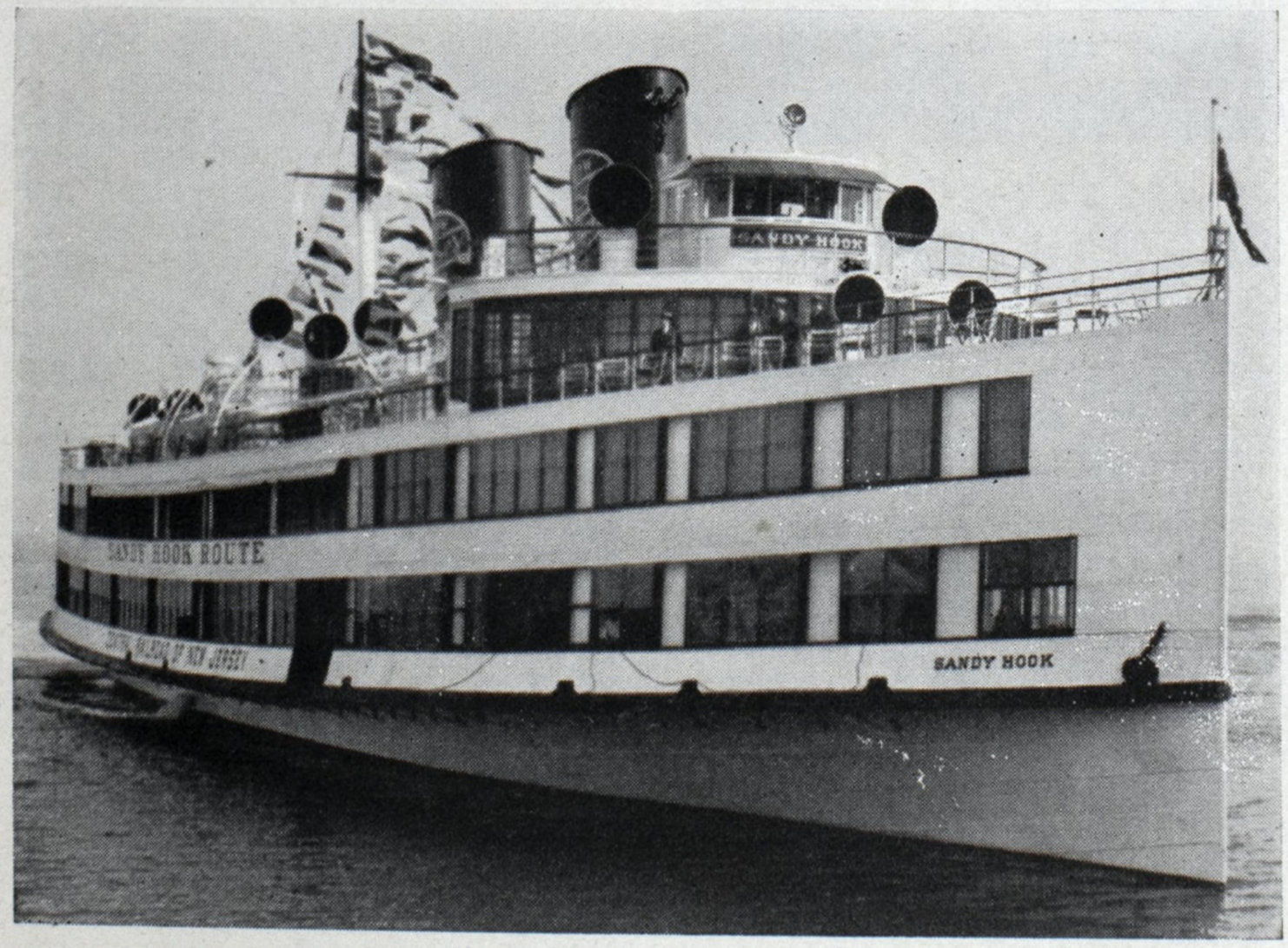
One large cabin and ten smaller staterooms are located in the bow on the saloon deck. These rooms are simply and attractively furnished with stick willow armchairs, tables and setees. The color scheme of the upholstery and curtains is light and airy in keeping with the furniture and other fittings.

The dining room is located amidships on the saloon deck, 18 inches above the surrounding deck to permit occupants an unobstructed view through the windows. The dominating color is electric blue. It has one set of casement windows opening on the saloon deck and another set at the level of the top deck. Over the main doors are two murals by J. Scott Williams, one depicting Navesink Indians atop the Highlands watching a landing party coming ashore from two galleons, anchored in a sunlit bay far below. The other mural portrays a pirate landing party coming ashore to bury its loot.

Farther aft on the saloon deck is the main lounge. In contrast with the traditional fashion of ship lounges for vessels of this type, the chairs, tables and setees are of the comfortable clubroom type, not in set aisles and fixed to the floors, but arranged as they would be in any well appointed room. On the sides of the lounge are three large windows, 16 feet in length. At one end of the lounge are open archways forming a mezzanine for the dance floor, on the deck below. The dance floor is covered with bright colored rubber tiling—an excellent surface on which to dance. Immediately outside the main entrance door is a refreshment stand with a number of small tables.

Most original of the New SANDY HOOK's rooms is the private salon opening on the observation deck aft. This room is 16 by 20 feet and the large center table will easily seat up to 20 diners. A serving pantry adjoins the salon and connects directly with the main galley to facilitate the service of meals in this room or on the deck outside.

Another feature of the new SANDY HOOK is the combined radio broadcast—public address—musical transmission system, which was adopted after a survey of similarly wired ships, clubs and hotels. There are seven main outlets. The system is so arranged that diners may listen to dinner music at the same time that dance music is broadcast in the ballroom.



Sandy Hook Fastest New York Harbor Vessel—After Rebuilding

Originally Built to Endure

The SANDY HOOK was built in 1889 by the famous old shipyard of Harlan & Hollingsworth, Wilmington, Del. As a de-luxe, fast passenger ship, her speed, high even for the present time, was 20 miles per hour. The principal dimensions are: Length over all, 270 feet 6 inches; length between perpendiculars, 260 feet; breadth molded, 37 feet; depth molded, 15 feet 6 inches; draft, 12 feet; displacement loaded approximately 1300 tons; Her gross tonnage 1518 and net tonnage, 1032. The passenger capacity is 2100 and no cargo is carried.

The propelling machinery built by Harlan & Hollingsworth, consists of two triple expansion steam engines with cylinders 21 x 36 x 55 inches in diameter and 28 inches stroke. The total horsepower in the two engines is 3200 at 140 revolutions per minute. Steam is supplied by four Scotch boilers 13 feet in diameter by 12 feet 8 inches in length, built by William Cramps & Sons Ship & Engine Building Co. Boilers burn coal and the bunker fuel capacity of the vessel is 80 tons.

As a result of excellent planning and good workmanship the new SANDY HOOK is an outstanding example of what can be done with vessels of her class to truly modernize them and to make them attract critical patronage. "The public be pleased" must be the carrier's motto today and this has truly been applied in the new SANDY HOOK. May she long serve the public and her owner with profit to both.

William Gardner & Co., for many years located at One Broadway has removed its offices to 21 West street, New York city. Members of the company, which was founded by William Gardner, noted naval architect and authority on yacht design, are now, Philip Leventhal and William T. Holley.

Good Hulls and Obsolescent Engines

Converted into Profit Earning Ships

By Kristen Tvede

SHIPPING men realize that it is not economical to operate even moderately old vessels, though the hulls may be perfectly sound, with the original steam machinery installations, because of the very definite advance in marine engineering during the last decade. Furthermore the hull characteristics satisfactory for the power necessary to give the speed accepted as normal ten years ago are not suitable for higher speeds. What to do with these otherwise sound vessels is a problem which has received serious practical study both here and abroad with strikingly valuable results. Two instances in the United States may be briefly mentioned.

First, the conversion of the two Hog Island ships re-named DELNORTE and DELSUD for the Mississippi Shipping Co. These two vessels were originally designed for a shaft horsepower of 2500 and a normal sea speed of 10.75 knots. Changes were made in both turbines and gears, the latter being practically rebuilt, increasing the service speed to 13 knots. Many other improvements were made at the time, including alterations to the hull, new rudder and propeller, and high class accommodations for 28 passengers. A detailed description of this conversion appears in the October, 1931 MARINE REVIEW.

Outstanding American Conversion

Another important American conversion was that of five ships for the Baltimore Mail Steamship Co. These ships were built for the United States shipping board in 1918 and were of 11,800 tons deadweight, 440 feet in length between perpendiculars, 56 feet in beam and had a normal sea speed of 10½ knots. After conversion the length over all became 507 feet ½ inch, length between perpendiculars, 486 feet and the cruising speed was increased to 16 knots; speed on trials, in one instance going as high as 18.5 knots. The hull changes involved removing the bows and sterns and adding about 40 feet at the forward ends of the ships with a new design of bow and a new stern frame and rudder. The original machinery installation of 2900 shaft horsepower was removed and in the same machinery space a modern turbine geared plant of 9500 horsepower driving a single propeller was substituted. One of these vessels, in the run from Newport News, Va. to Havre, 3341 nautical miles, in 8¼ days, consumed 76.3 tons of bunker oil per day. Detailed particulars on this conversation will be found in MARINE REVIEW for April, 1932.

Even greater efforts are being successfully applied in European shipyards in cooperating with the shipowner in answering the question of what to do with those otherwise perfectly good ships which have become obsolescent, due to present day requirements and advance in marine engineering. Abroad competition is still keener due to the widespread use of the economical diesel engine vessel.

In Sweden the Lindholmen-Motala shipyard at Gothenburg, in cooperation with representatives of the Lentz uniflow engine, made a thorough study of the application of this type of power in conjunction with other fuel saving modern steam engineering features. As a result a number of patents of various fuel saving improvements in design were granted in 1927. In that year this shipyard modified two engine installations, saving 31 per cent in coal consumption. In 1928 five vessels were modified, at a fuel saving of between 29 and 33 per cent. In 1929-30 this company received orders for the improvement of 11 vessels, resulting in a fuel saving varying between 25 and 38½ per cent.

Dutch Shipyard Offers Solution

In Holland, Wilton's Engineering and Slipway Co., Rotterdam, recognizing the problem of the shipowner, prepared to offer a solution by carefully studying and evaluating in a practical manner all of the important modern developments in naval architecture and marine engineering. The well established fact that increased length will reduce resistance was amplified by the suggestion that the Maier ship form be applied to the fore body in the process of lengthening the vessel. A hull formed on these lines, it is claimed, while giving more favorable proportions for minimum resistance also reacts favorably on the ship's behavior at sea with the result that there is less loss of speed during heavy weather. In extensive model tank trials the Wilton engineers demonstrated that a rebuilding of a fore body of an existing vessel to the Maier ship form is definitely advantageous and especially so when combining this change with the adoption of the latest information in the design of propellers of greater efficiency. Other factors entered in, such as the influence of streamlining the after body, shaftbossings and rudders to increase the effectiveness of the propellers.

By converting the passenger vessel SLAMAT, built in 1922 for the Rotterdam Lloyd, having a length of 500 feet, breadth, 61 feet 8½ inches, depth 38 feet and of 11,400 gross tons, Wilton's Engineering & Slipway Co. successfully carried out on a large scale the improvements suggested by carefully conducted model experiments.

When originally built this vessel was intended for service between Holland and the Dutch East Indies at an average speed of 15 knots. Comparatively recently completed new vessels for the same owner have an average speed of 17½ knots and it was decided, if feasible to do so, to increase the speed of the SLAMAT so that she could

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For information used in this article acknowledgment is made to Wilton's Engineering and Slipway Co., Rotterdam, Holland and to G. De Vries for his paper on *Improvements to Existing Marine Steam Engine Plants,* read before a meeting of the Dutch Institution of Marine Engineers at Rotterdam in 1931.

SO rapid has been the improvement in marine steam engineering during the past few years that it is no exaggeration to say that 10 even 8-year old orthodox steam vessels are out of date.

What is an owner to do? He is beset in two ways. His operating costs are 20 to 30 per cent higher than they need be and due to the slow speed of these not old yet obsolete vessels he is not in a position to compete for the best paying freights. This article is intended as food for thought on a way out of the dilemma. First plan carefully then act promptly and vigorously. The facts must be met with courage. Success or failure is in the balance.

Editor's Note

maintain the same sailing dates as the new vessels.

Fortunately the SLAMAT was originally designed to burn coal, though the bunker spaces were suitable for carrying oil, and before entering service the vessel was fitted to burn oil so that the boilers were of ample capacity for a greater engine output. In converting the SLAMAT, it was therefore possible, as far as boiler capacity was concerned, to increase the turbine horsepower output by about 25 per cent by alterations to the turbines alone. It was found that this increase in propelling power increased the speed of the vessel about one knot without alteration of the vessel's lines. The additional one and one-half knot needed was gained by altering the ship's form and the design of the propellers.

Conversion of Dutch Ship

Careful investigation by the shipyard engineers indicated that it was possible to attain the required speed of 17½ knots by the following alterations:

1. Lengthening the fore body by 15 feet on the waterline and at the same time applying the Maier ship form to the fore body.

2. Improving the effective power by applying propellers of improved Wilton design.

3. Substituting a streamline rudder.

4. Shortening the bilge keels by removing the portions most seriously interfering with streamline action.

5. Altering the shaft bossings to give minimum resistance.

In tank trials, of models of the original vessel and after the proposed alterations enumerated above, the results showed that for a speed of 17½ knots before conversion, 12,900 shaft horsepower would be required, while for the converted ship only 8100 shaft horsepower would be required. These results were confirmed during the maiden voyage of the ship after conversion by accurate speed and horsepower measurements carried out on the trip from Rotterdam to Marseilles. The owners of the SLAMAT reported that before conversion this vessel consumed 4220 tons of oil on a round voyage between Rotterdam and the Dutch East Indies at an average speed of 15 knots, and that after conversion on a similar round voyage, at an average speed of about 17½ knots she consumed only 4270 tons of oil.

Accomplished in Three Months

An interesting feature of the conversion was the speed with which the work was carried out. The time available, without undue interference with the service, was only three months. Within this period the forward part of the vessel to a length of about 98 feet was removed and a new part, including frames and double bottom, having a length of about 124 feet was built on. The new materials, plates and sections, required for the conversion, weighed about 420 tons. Great care was used in planning the work to expedite completion. Measurements were taken before the ship left for her last voyage before conversion, and a new fore body plan was laid off from these measurements. Material was ordered, shaped and worked from mold loft information and the new fore body constructed. When the ship arrived at the yard, practically all of the material was worked and ready for immediate use after the removal of the original fore body. By these time-saving methods the vessel occupied the floating drydock for a period of only eight weeks in order to undergo this elaborate conversion work without necessitating night work of importance.

Wilton's Engineering & Slipway Co. in further preparation for helping the shipowner solve the problem of what to do with his 10 or 12 year old obsolescent ships secured the license for applying the Lentz principal and other associated features for improving the performance of reciprocating engined Scotch boilered vessels. This license was secured in 1929. In 1930 the Wilton shipyard modified the machinery installation of the S. S. OOTMARSUM, and the S. S. SPAR. The same company also similarly converted the HILVERSUM, the OOSTZEE and STOLWUK. All of these vessels are fitted with reciprocating engines and savings in fuel consumption of more than 30 per cent have been obtained.

Sea Trials Before and After

It is interesting to note that prior to the alteration of a vessel a trial trip is held, of at least six hours' duration in loaded condition at sea, during which the fuel consumption is checked and all other necessary data is recorded. After alteration, or as this particular type of conversion is termed "Lentzifying", a second sea trial is held under similar conditions. Dock trials may also be held before and after conversion under precisely similar conditions when the engine is kept running for at least six hours continuously while developing its normal power at the rated revolutions.

Contracts for this type of conversion usually contain a clause stipulating that for every per cent of saving below the guaranteed figure the contractor is to pay the owner a penalty of approximately 10 per cent of the contract price. On the other hand the owner must pay the contractor a premium of equal value for every per cent by which the actual saving exceeds the guarantee.

What Modernization Means

Briefly this process of alteration or "Lentzifying", the name applied because one of the features is the substitution of a Lentz poppet valve cylinder for the ordinary high pressure cylinder of the usual reciprocating engine, is mainly as follows:

1. *Fitting of superheater elements in the boiler tubes, increasing the steam temperature to about 570 degrees Fahr. at the stop valve.*

2. *Substituting a Lentz poppet valve cylinder for the usual high pressure cylinder.*

3. *Fitting of a special feed water heater of the Lindholmen-Motala type.*

This heater is of a new contraflow principle and of several stages. The design is simple. Each stage consists of a seamless tube internally provided with tubes through which the feed water passes. Exhaust steam from auxiliaries and if necessary also steam from the middle and low pressure receiver is used for heating purposes. With a low steam consumption temperatures of over 250 degrees Fahr. are easily obtained.

4. *Alterations to boilers, furnace gear and funnel.*

The object is to increase the velocity of the combustion gases and to bring about closer contact between these gases and the surfaces surrounded by water. The combustion gases are compelled to cover a longer distance and hence a more intensive transmission of heat is possible.

5. *Fitting of a special kind of oil separator for the feed water.*

The use of superheated steam makes necessary an effective feed water filter. This special filter which is patented by the Deutsche Werft makes the condensate entering the water space strike against a plate by which the whirls existing in the water are eliminated. The water space is subdivided into two parts by a slanting guide plate.

6. *Improved lubrication of the engine.*

Although this feature is not directly a part of the improvements included in the term "Lentzifying", the lubrication of the engine may be improved by using the patented system of Henry Brillie, engineer in chief of the Compagnie Generale Transatlantique. In this system the bearings and thrust blocks are provided with oil grooves of a special profile, so shaped that the streamline of the oil film receives a whirl-free flow-off. Experiments with these oil grooves prove that the efficiency of the engine can be improved by the adoption of this system.

Several other minor modifications which depend upon the arrangement and design of the particular machinery installation under consideration, are also applied. The entire engine is carefully examined in connection with the use of superheated steam. If not already done the middle pressure slide valve is balanced and the high pressure and middle pressure stuffing boxes are provided with metallic packing. If necessary the condensing plant should be examined and tested to obtain a maximum vacuum; also consideration should be given to the wisdom of working the auxiliaries with low superheated steam. Special steam dryers are fitted and boilers are of course provided with soot blowers.

Signaling With a Multi-Unit Electric Air Oscillator

THE Multi-unit type electric air oscillator was designed to meet demand for a powerful air signal which would be efficient and have low maintenance and repair costs. The construction and method of operation of the multiunit air oscillator differ fundamentally from those of other sound producers. It consists of two electric air oscillator units mounted one above the other and so spaced with relation to each other that the maximum efficiency of the combination results. The axis of the horns of one unit is at right angles with the axis of the horns of the other unit.

The construction of each air oscillator unit comprising the multiunit air oscillator is similar to that of a telephone receiver. It consists of a powerful electromagnet so arranged that, when it is energized by alternating current, it causes an armature rigidly fastened to each diaphragm to oscillate at a definite frequency. A cone shaped horn or trumpet and a resonating chamber are placed in front of each diaphragm and so proportioned that the maximum sound is emitted. The width of each oscillator unit is 42 inches and the overall height of the two combined units is 63 inches. The total weight is 2100 pounds.

Signal Intensity and Distance

Numerous experiments with fog signals have shown that the signal intensity at a distance bears very little relation to the signal strength near the source. The major portion of the sound produced by the average steam or air whistle is dissipated in overtones in the vicinity of the whistle. The comparatively pure low-pitched fundamental or master tone which is heard at a distance from such a steam or air whistle comprises what is left, after absorption by the atmosphere, of that small portion of the total energy which originally existed in the signal at that tone.

Through the perfection of a design whereby perfect resonance is affected combined with the correct adjustment and accurate control of the frequency of the alternating current used to energize the multiunit air oscillator, the Submarine Signal Co. produced a fog signal with a pure tone of great carrying power. The aim in the design of fog signals should be to concentrate all of the sound energy into the master tone.

Another advantage in the use of a pure signal developed electrically, is the feasibility of increasing the amount of sound energy developed at any point by increasing the number of units. By utilizing two units, for instance, as is done in the case of the multiunit air oscillator and sounding them in synchronism the sound outputs from the two units are additive and, consequently, the intensity of the signal is increased. This increase can be made as great as is desired by increasing the number of units.

Creating Sound in One Plane

This ability of the air oscillator units to operate together makes it possible to concentrate the sound in a horizontal plane. By mounting electric air oscillator units one above the other and in the proper relation to each other, the sound can be transmitted horizontally where it is desired.

Comparative tests made between one of the units used to make up the multiunit air oscillator and a 12 inch steam chime whistle show that the single unit will give a signal which is audible at substantially the same distances as is the 12 inch steam chime whistle. Therefore, if the multiunit air oscillator is installed on a light-vessel and through some mischance one of the units becomes inoperative the other unit can still be used effectively as a first-class fog signal. The necessity for furnishing a standby fog signal is eliminated.

The development of a full power sound signal is practically instantaneous. There is no delay between the closing of the key and the production of full power by the signal, as sometimes occurs with either steam or air operated whistles.

The installation of the multiunit air oscillator near the power plant is unnecessary since the power is transmitted electrically. By the use of sea or shore cable this oscillator can be installed at remote places.

Performance Tests Show Range

A statement of ranges obtainable with air signaling devices may be misleading since, if the maximum ranges at which the signal had been heard under favorable conditions were given, one might expect better ranges than would ordinarily be obtained, while, on the contrary, if minimum ranges were given the device would be put at a disadvantage. To overcome this difficulty the Submarine Signal Co., decided to show ranges obtained with the multiunit air oscillator in comparison with existing fog signals.

The multi-unit air oscillator was compared for range of audibility with a 12 inch steam chime whistle operated at 60 to 65 pounds pressure.

From a test where the multiunit air oscillator was compared with a 6-inch steam siren and a 12 inch steam whistle the following results:

With listening vessel underway maximum range of siren 2 3/5 miles; maximum range of whistle 4¾ miles; maximum range of multiunit oscillator; not determined but every blast could be heard 7½ miles.

With listening vessel stopped; siren could not be heard at 3.7 miles, heard whistle 7½ miles but missed many of the blasts; heard every blast of multiunit oscillator plainly 7½ miles and much louder than whistle.

The siren and steam whistle used in the tests were operated at 60-65 pounds pressure.

The efficiency of the multiunit air oscillator is obvious, since the power consumption of this unit during the blast is approximately 6600 watts, whereas the input of the steam whistle is many times greater.

The multiunit air oscillator has no moving parts that require lubrication. The only parts of the air oscillator that move are the ones that vibrate. Hence, there is no need for lubrication because of the absence of friction.

The multiunit air oscillator requires no periodical inspection of parts and no adjustments. Its operation is simple; all that is necessary to put it into operation is the closing of a switch.

The entire maintenance and repair of the installation are confined practically to the power unit inasmuch as the expense involved in painting the fog signal itself is slight. The only cost, therefore, which should be considered in arriving at the cost of operation is that of the electricity which is used.

This article was prepared by a member of the staff of the engineering department of the Submarine Signal Co., 160 State street, Boston.

U. S. Navigation Laws

Arthur J. Tyrer, commissioner of the bureau of navigation, recently announced that a new volume of navigation laws now in force has been issued and is ready for distribution. The title is *The Navigation Laws for* 1931 and it contains a compilation mainly of those laws now in force from the first one passed in 1789 and signed by President Washington for the collection of tonnage taxes, to the latest. An effort has been made to confine this volume, which is a book of about 460 pages, to the laws actually in force with which owners, masters and agents of vessels should be acquainted.

The new book is divided into major sections covering laws on measurement, load lines, documents, officers of merchant vessels, merchant seamen, seaworthiness, inspection of steam vessels, discrimination and retaliation, entry and clearance, custom laws directly relating to vessels, and many other interseting subjects.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

IN A COLLISION between a moored vessel and a moving one, the presumption is that the latter was at fault, according to the decision in the case of NIELS R. FINSEN, 52 F. (2d) 795. It appeared in this case that a towing company undertook as independent contractor the work of docking a steamer. Its employe, a tug captain, took charge of the operation as part of the job he held and for which he was paid by the towing company. Except for special situations presented by the limitation of liability acts and the like, said the court, the rule of respondeat superior applies in maritime cases as fully as in nonmaritime cases, and the operation of this rule would place liability in personam upon the towing company for damages caused by the negligence of its employe. As for the charterer, the court said that under a time charter not constituting a demise of the steamer, the proper navigation of the steamer is the concern of the owner, not of the charterer; this is true even where the charterer is to provide and pay for pilotage and where the damage is due to unskilful work on the part of the pilot furnished by the charterer. The fact remains, it was declared, that the docking of the vessel was part of her navigation, and the charterer is not liable because of the negligence of the pilot.

* * *

A CARRIER submits itself to an absolute liability if its representatives make delivery of sound cargo and fail to obtain proper security for the protection of the lien which the damaged cargo has for contribution in general average. The owner of sacrificed cargo has a lien upon the other cargo for the amount of its contribution. If the representative of the vessel destroy the lien by free delivery, the vessel becomes liable. Any other rule would place a heavy burden upon the shipper which, from the nature of the situation, would be difficult for it to sustain, and would be contrary to the well-recognized obligation of a vessel to cargo entrusted to her for carriage.—Dibrell Bros. Inc. v. Prince Line Ltd., 52 F. (2d) 792.

* * *

IF, AFTER a collision, the master and bailee of a barge was negligent in leaving with the tug, leaving the barge in charge of an inexperienced deck hand, that does not make him liable and relieve the tug wholly or in part for sinking of the barge unless his negligence became the intervening, efficient cause which itself produced the injury. The captain of a barge, who is shown to be negligent, cannot be made liable for the sinking unless his neglect caused it.—THOMAS J. CLEAVER, 52 F. (2d) 913.

* * *

VESSELS, without distinction, whether pleasure yacht or other craft, are subject to the scrutiny of the coast guard and custom officials within the jurisdiction, without "probable cause" or a search warrant.—United States v. Hales, 52 F. (2d) 977.

* * *

IT IS a well-settled maritime rule that the burden rests upon a ship violating a maritime rule to show, not merely that her fault might not have been one of the causes, or that it probably was not, but that it could not have been a cause of collision. In the instant case, both vessels having been at fault, the damages were divided—OLD COLONY, 52 F. (2d) 992.

* * *

IT IS the duty of officers of a vessel to use reasonable care to furnish stevedores with reasonable safe appliances with which to work. However, they are not charged with the duty of constant inspection of the appliances furnished. If what was initially furnished was reasonable safe and adequate and became defective through use while in charge of the stevedores, it is necessary for knowledge of that fact to be brought home to the officers of the ship before any duty of replacement arises.—Bryant v. Vestland, 52 F. (2d) 1078.

* * *

TUGS engaged in towage are not insurers, but are required to use reasonable care and skill in the service they have undertaken. They are bound to respect barometer readings and weather indications; and for failure to do so are liable for resulting damage, it was held in the case of T. J. HOOPER, 53 F. (2d) 107. In this case, there was raised the question whether tugs engaged in coastwise towing service are required to have effective radio sets, and the court said: "Concededly, there is no statutory law on the subject applicable to tugs of that type, the radio statute applying only to steamers 'licensed to carry, or carrying, fifty or more persons,' and excepting by its terms 'steamers plying between ports, or places, less than two hundred miles apart.' The standard of seaworthiness is not, however, dependent on statutory enactment, or condemned to inertia or rigidity, but changes 'with advancing knowledge, experience, and the changed appliances of navigation.' It is particularly affected by new devices of demonstrated worth, which have become recognized as regular equipment by common usage." The court then held that tugs engaged in coastwise towing service to be seaworthy should be equipped with radio receiving sets to receive weather reports.

* * *

WHEN a carrier has made a false representation about the condition of merchandise taken on board which is likely to involve progressive decay, it should be compelled to abide by the consequences and should not be allowed to invoke exceptions in bills of lading relieving it from damage arising from "vermin * * *leakage, wastage, * * * decay."—CARSO, 53 F. (2d) 374.

* * *

A CUSTOM alleged to obtain among boats engaged in the fishing trade of pulling boats off a reef without obligation upon the part of the aided, save to render like assistance to other boats so employed upon occasion, was held, in the case of STAR, 53 F. (2d) 890, to be contrary to public policy, if given effect as superseding salvage. Said the court: "While the expectation of like assistance in time of need may furnish a strong incentive to the owner of the boats in this trade to aid other boats, so employed, in distress, the receipt of such award is uncertain, and in no way dependent upon the risk taken or success achieved. The court cannot say that the incentive furnished by such a custom, if it exists, is as strong as that growing out of the right the admiralty law gives to a salvage award." For salvage service in pulling a $7000 fishing boat off the reef, the court allowed tug owners $500, the engineer $75, and the crew $50.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	270	1,506,696	277	1,515,147
March	332	1,982,670	375	2,070,546
February,	312	1,875,981	322	1,776,394
January	297	1,821,335	305	1,719,978
December	314	1,692,258	343	1,744,190
November	304	1,564,284	308	1,542,849
October	309	1,626,094	322	1,708,560
September	523	2,724,761	522	2,641,711
August	541	2,785,703	531	2,739,919
July, 1931	538	2,626,814	563	2,754,107

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	55	165,646	51	159,427
March	57	186,479	45	151,190
February	49	150,899	34	98,667
January	51	168,266	36	114,982
December	58	180,172	42	132,734
November	52	148,335	37	111,969
October	69	192,159	57	160,609
September	66	172,313	54	155,113
August	81	208,854	59	147,948
July, 1931	76	201,677	59	155,114

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	103	308,951	72	215,237
March	99	319,863	65	217,992
February	107	315,036	63	213,166
January	94	286,508	61	208,491
December	102	313,977	65	240,908
November	75	241,142	52	166,786
October	98	325,261	66	241,072
September	109	339,482	78	263,783
August	131	388,799	98	305,488
July, 1931	131	362,111	94	290,733

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1932	14	41,083	13	35,993
February	20	53,793	20	56,558
January	13	28,179	14	28,955
December	18	38,860	18	37,319
November	17	40,991	19	47,514
October	17	39,060	16	34,195
September	27	48,534	26	52,035
August	29	50,249	23	39,273
July	24	52,979	22	52,945
June, 1931	17	28,216	17	26,397

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1932	8	35,293	5	24,289
February	5	19,442	4	18,533
January	8	41,147	4	21,654
December	11	41,268	4	17,037
November	9	35,826	5	18,040
October	6	23,833	6	23,836
September	6	20,330	3	11,160
August	10	41,671	3	12,240
July	6	25,062	7	30,748
June, 1931	6	21,104	3	12,211

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1932	....	.....	....	.....
February	32	127,810	36	149,417
January	27	112,542	42	168,762
December	29	114,184	40	154,060
November	26	103,835	47	182,585
October	36	144,875	54	207,518
September	32	126,256	49	199,803
August	29	114,582	31	119,968
July	28	107,694	48	174,226
June, 1931	30	116,953	35	139,799

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	108	346,276	114	377,317
March	96	288,052	105	319,511
February	105	337,487	98	323,603
January	95	301,958	102	328,876
December	102	330,709	106	354,320
November	99	304,138	98	314,109
October	116	388,308	111	385,136
September	111	350,556	117	362,970
August	122	374,434	118	377,085
July, 1931	125	393,553	120	379,526

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	22	59,932	33	77,515
March	33	79,948	42	99,939
February	22	68,136	48	121,647
January	17	53,536	38	104,392
December	30	95,762	38	110,614
November	23	77,075	47	113,416
October	25	76,385	54	146,995
September	24	72,333	47	104,255
August	21	59,408	54	127,864
July, 1931	31	77,082	63	149,665

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	9	17,886	9	21,812
March	8	15,560	13	26,457
February	8	18,785	10	21,812
January	8	26,601	12	27,759
December	12	25,453	10	21,501
November	6	14,295	8	22,180
October	10	25,659	9	17,710
September	6	12,463	8	18,888
August	21	61,439	24	70,922
July, 1931	9	18,703	5	9,297

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	55	77,443	50	80,778
March	41	61,078	39	59,069
February	39	59,334	39	66,392
January	43	67,913	42	71,873
December	39	68,392	40	73,365
November	40	53,752	42	53,497
October	37	57,588	37	59,408
September	36	54,012	35	55,610
August	37	56,505	37	56,505
July, 1931	39	59,268	41	62,526

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	102	192,617	104	202,965
March	97	204,645	98	211,921
February	101	235,846	96	219,215
January	110	253,792	112	242,378
December	98	226,656	85	214,395
November	100	214,204	87	189,474
October	118	251,661	112	253,721
September	104	213,204	102	226,192
August	113	217,541	97	194,678
July, 1931	101	229,960	92	212,634

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	40	171,346	43	191,352
March	43	190,082	43	180,862
February	50	217,837	54	232,138
January	48	200,281	50	216,819
December	50	218,018	48	204,111
November	48	209,655	50	215,614
October	61	257,329	62	267,366
September	52	229,687	50	217,517
August	48	202,879	51	213,091
July, 1931	46	207,651	50	222,816

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
March, 1932	....	.....	....	.....
February	157	436,882	169	469,296
January	171	516,707	171	506,411
December	169	482,802	170	504,981
November	173	498,800	169	483,099
October	174	502,867	195	563,095
September	171	474,876	179	508,560
August	179	484,245	172	474,230
July	184	539,810	172	509,475
June, 1931	193	561,399	190	562,090

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net. tonnage	—Clearances— No. ships	Net tonnage
April, 1932	21	53,404	21	57,341
March	37	131,723	36	110,353
February	32	88,616	27	75,262
January	24	73,488	22	16,217
December	37	108,083	35	96,490
November	19	31,125	11	35,588
October	20	49,738	22	55,371
September	16	29,428	11	19,111
August	9	18,293	7	6,274
July, 1931	13	26,985	10	20,974

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	44	97,609	106	297,282
March	32	61,079	109	319,013
February	27	64,866	101	317,095
January	26	73,215	92	292,274
December	37	113,327	111	358,950
November	33	81,906	101	328,883
October	35	80,748	112	354,607
September	27	63,896	99	320,127
August	39	85,793	79	234,583
July, 1931	46	107,008	75	226,381

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	189	617,325	229	635,301
March	168	622,067	188	611,770
February	164	627,876	158	622,730
January	144	578,699	149	594,384
December	153	517,165	136	506,985
November	147	503,238	142	535,870
October	215	720,162	193	678,776
September	199	580,683	196	593,882
August	199	673,223	204	676,036
July, 1931	170	622,694	176	636,440

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	146	663,647	144	613,085
March	139	645,331	162	709,778
February	149	638,222	144	583,030
January	145	635,218	147	646,987
December	155	649,915	122	579,608
November	167	688,934	149	614,482
October	167	688,934	149	614,482
September	158	658,088	159	673,120
August	140	636,189	160	665,108
July, 1931	173	743,588	155	679,657

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
April, 1932	31	131,585	39	155,861
March	27	113,624	43	167,956
February	25	103,589	43	162,236
January	25	108,322	36	145,084
December	26	99,354	42	148,568
November	34	139,899	62	225,833
October	28	126,071	52	194,114
September	34	132,684	45	163,144
August	31	127,112	44	163,103
July, 1931	35	148,988	45	178,091

Note: The figures given in this table are for direct entrances and clearances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 49 of 168,519 net tons entered and 31 of 105,469 net tons cleared for the month of April.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE new liner MANHATTAN now under construction by the New York Shipbuilding Co. at Camden, N. J., for the United States lines' fleet and the first large transatlantic liner to be built for the new American merchant marine, will leave New York for her maiden voyage on Aug. 10, almost two months ahead of the time expected.

In spite of important alterations and improvements in the original plans, involving addition of a large number of private baths and structural changes to extend the promenade deck, P. A. S. Franklin, chairman of the board of the Roosevelt Steamship Co., managing operator, said on May 16, the builder has reported that work is progressing so rapidly that delivery can be made at approximately the same date agreed upon before the changes were ordered.

This stepping up of the work on the MANHATTAN will put her into service in time to accommodate homeward bound American tourists this summer. Aug. 10 has been selected as her eastbound sailing date, as this will fix the date of her return voyage from Hamburg Aug. 24, the peak of the westbound rush, and her arrival at New York, Sept. 1.

Dock trials were scheduled to be held the week of May 16 to test the main propulsion and auxiliary machinery. The liner will go into the navy drydock at Philadelphia, May 26 for cleaning and painting of the hull. Toward the end of May she was to have a series of trials outside the breakwater at the mouth of the Delaware river, for the adjustment of navigating instruments and testing of winches, steering gear and other equipment.

Official sea trials are scheduled for July and will be run off Rockland, Me., over the navy measured mile course.

The MANHATTAN, largest liner ever built in America, is 30,000 tons gross register, 705 feet long and 86 feet beam. She will carry 400 cabin passengers, 500 tourists and 200 third class, and will ply between New York and Hamburg, calling at Cobh, Plymouth and Havre eastbound and at Southampton, Havre and Cobh westbound. She will have a maximum speed of 22 knots, which will make her the fastest cabin liner in the world. According to her schedule she will reach Cobh on the sixth day, channel ports on the seventh and Hamburg on the eighth day out of New York.

It has been reported that a contract was recently awarded the Midland Barge Co., Midland, Pa. for the construction of two 1000 horsepower towboats of the tunnel screw type for the Federal Barge lines. These vessels will be similar to the MARK TWAIN recently completed and described in the April MARINE REVIEW. The names are to be HUCK FINN and TOM SAWYER. They will be built of steel and be 160 feet long, 42 feet in beam and 6 feet deep.

Appropriations were approved in the House of Representatives for expenditure of $14,000,000 for alterations and repairs as necessary in modernizing the battleships MISSISSIPPI, IDAHO and NEW MEXICO. This work, it is assumed, will be carried out in navy yards, but material and equipment of one kind and another will be bought from private companies.

Board Sells Two Vessels

The shipping board on May 17 authorized the Merchant Fleet Corp. to accept the offer of the Merchants & Miners Transportation Co. to purchase the S. S. LAKE GLASCO for $30,000 cash, for operation in the company's long established coastwise service. The S. S. LAKE GLASCO is an oil burning lake type vessel of 4155 deadweight tons, equipped with one triple expansion engine and two Scotch boilers. The purchaser will recondition the vessel making necessary alterations to adapt it to the coastwise trade.

At the same meeting the board also authorized the Merchant Fleet Corp. to accept the offer of The Texas Co. to purchase the S. S. WESTLAKE for $15,000 cash, "as is, where is," the vessel to be used as a stationary oil storage plant, all machinery and equipment not essential to the storage plant to be completely scrapped. The S. S. WESTLAKE is an oil burning vessel of 8548 deadweight tons, equipped with General Electric turbines and gears, and three Scotch boilers. She was built in 1918 and has been in lay-up since March, 1927.

Contract for the construction of a 125-ton railroad carhandling crane for the Hoboken, N. J. terminus of the Seatrain Lines Inc. has been awarded to the Shepard-Niles Crane & Hoist Corp., Philadelphia. This traveling crane will load freight cars on the two oceangoing vessels for carrying loaded railroad cars which are now under construction at the Sun Shipbuilding & Dry Dock Co., Chester, Pa. The service will be between New York and Havana, similar to that now underway between New Orleans and Havana.

The new tanker FRANZ CLASSEN, ordered by the Standard Shipping Co., New York, for the German American Petroleum Co., was launched at the Deutsche Werft, Hamburg on April 30. This is the first of six 17,800-ton steam tankers ordered in Germany, two at the Deutsche Werft, two at the Vulkan Werke, Stettin and two at the Germania Werft Kiel.

To Launch New Liner

The SANTA PAULA, new Grace liner, building at the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., and sister ship of the SANTA ROSA, SANTA ELENA and SANTA LUCIA, will be launched on June 11. The sponsor is to be Mrs. Edward T. Ford, San Francisco, wife of the president of the Panama Mail service of the Grace line. This vessel and her three sister ships, among the finest additions to the American merchant marine, were designed by, and are being built under the supervision of, Gibbs & Cox Inc., naval architects, New York.

The keel was recently laid at the Great Lakes Engineering Works, River Rouge, Mich., for a powerful, diesel electric tug ordered by the Ford Motor Co. The new vessel, 85 feet long, is being built from designs by Henry J. Gielow Inc. and will be completed by July 1. It is to be of all-steel construction and will carry a pair of 330-horsepower Cooper-Bessemer diesel engines, direct connected to generators supplying current for a single 500-horsepower electric motor.

A 420-foot dock and marine supply building for complete marine service is under construction at Noank, Conn. for the Noank Boat Exchange. This will serve the needs of large and small craft in the area including New London harbor, Fisher's Island, Watch Hill and Mystic river. The owner is S. C. Wood.

U. S. Engineers Request Bids

The United States engineer office, San Francisco, on April 28, issued an invitation for bids, to be received until 3 p.m. May 31, for furnishing spare crank shaft for the dredge A. MACKENZIE.

Sealed bids in duplicate will be received until 2 p.m. June 1, by the United States engineer office Memphis, Tenn., for the construction and delivery afloat at contractor's plant, of two steel hull whirler derrick boats.

The United States engineer office on the Arkansas side of the Mississippi river (opposite Memphis, Tenn.) received bids on May 19 for furnishing and delivering a quantity of cast steel hatch covers, coamings, bolts and patterns.

Bids will be received until 10 a.m. June 10, by the United States engineer office, 333 North Michigan avenue, Chicago, for furnishing all labor and materials and performing all work for headgate alterations and appurtenant work, at the Brandon road dam on the Des Plaines river. The work includes building and installation of new gates; also a hoist for raising and lowering the new gates.

The largest vessel of her type in Canada, the derrick boat FOUNDATION SCARBORO was launched on May 7 at Montreal, sponsored by Mrs. R. C. Harris, wife of the commisioner of works of Toronto.

This craft is equipped for a lifting capacity of 300 tons and was designed by the Foundation Co. of Canada for a special contract under way at Toronto which involves handling sections of 8-foot steel and concrete pipe weighing 250 tons. The new vessel is 100 feet long, 42 feet wide and has a molded depth of 11½ feet.

The S. S. MONTEREY, new Matson liner, carries a 60-cell Exide marine battery for emergency current for lights, radio, telegraph, bilge pump and watertight doors. A low voltage system of Exide marine batteries supply current for intercommunication, fire alarm, and annunciator bells. There are two 6-cell Exide marine batteries for radio power in the two motor lifeboats.

A contract has been awarded to the Radiomarine Corp. of America by Moore & McCormack Co. Inc. for the installation of seven radio direction finders on vessels of that company's fleet. According to Charles J. Pannill, executive vice president of the Radiomarine Corp. of America, Moore and McCormack will then have RCA direction finding equipment on seventeen vessels.

Champlain Speed Trials

On May 19, the new French cabin liner CHAMPLAIN was given her official sea trials off the French coast, making a speed of 19.8 knots. The contract average speed is 18 knots. The CHAMPLAIN has twin screw geared turbine drive, and was built at the St. Nazaire shipyard where the super ILE DE FRANCE is now under way.

The CHAMPLAIN is of about 30,000 gross tons and is 650 feet long with accommodations for 623 cabin, 308 tourist and 122 third class passengers, and a crew of 575. She is scheduled to sail from Havre on June 18, on her first voyage to New York via Plymouth. She is one of the finest vessels of her type afloat.

Port Houston Sets Record

With the movement of 1066 vessels on the Houston ship channel in the first three months of this year, another record was established. This is the largest number of vessels to navigate the waterway in any corresponding period in the port's history.

Not only has the total tonnage moving through the port shown a substantial increase this year, but in the handling of various individual commodities Houston has established new high marks, both for the port and for other ports throughout the country.

Fire Destroys Pier 54

No time is being lost in taking action toward the rebuilding of the Cunard line Pier 54, North river, New York. This pier was completely destroyed by fire on May 6. On May 19, John Gammie, assistant general manager of the Cunard line announced that a contract had been awarded to the John E. Smith Wrecking Corp. for the demolition and removal of the wreckage.

At the same time plans for the new pier are under way and it is expected that a contract for new construction will be awarded early in June and that it will take about seven months to complete. In the meantime the Cunard line will use shipping board Pier 4 at Hoboken, N. J. The estimated loss was about $2,000,000, and the cost of replacement will probably be at least as much.

Resolutions asking for continued development of the inland waterways will be adopted by the National Rivers and Harbors congress when it meets at the Congress hotel, Chicago, on June 13.

A Floating Post Office

Frank Becker, Detroit, has been awarded a four-year mail contract calling for a suitable vessel for delivery and collection of mail to and from Detroit river traffic in transit. This unique floating post office is an all steel boat with overlap welded hull, now under construction by the Hans Hansen Welding Co., Toledo, O.

The length over all is 64 feet 9 inches; length on the load water line, 63 feet; breadth molded, 16 feet; draft extreme, 4 feet 5 inches. Propelling power is one Fairbanks-Morse 2-cycle, solid injection, 5-cylinder, 125-150 horsepower marine diesel engine. The anticipated speed is over 13 miles per hour. Auxiliaries include an air tank, air compressor and a 1500-watt Fairbanks-Morse plant for electric lighting. Launching is to take place June 5 and the new vessel is to be christened G. F. BECKER.

Bunker Prices

At New York

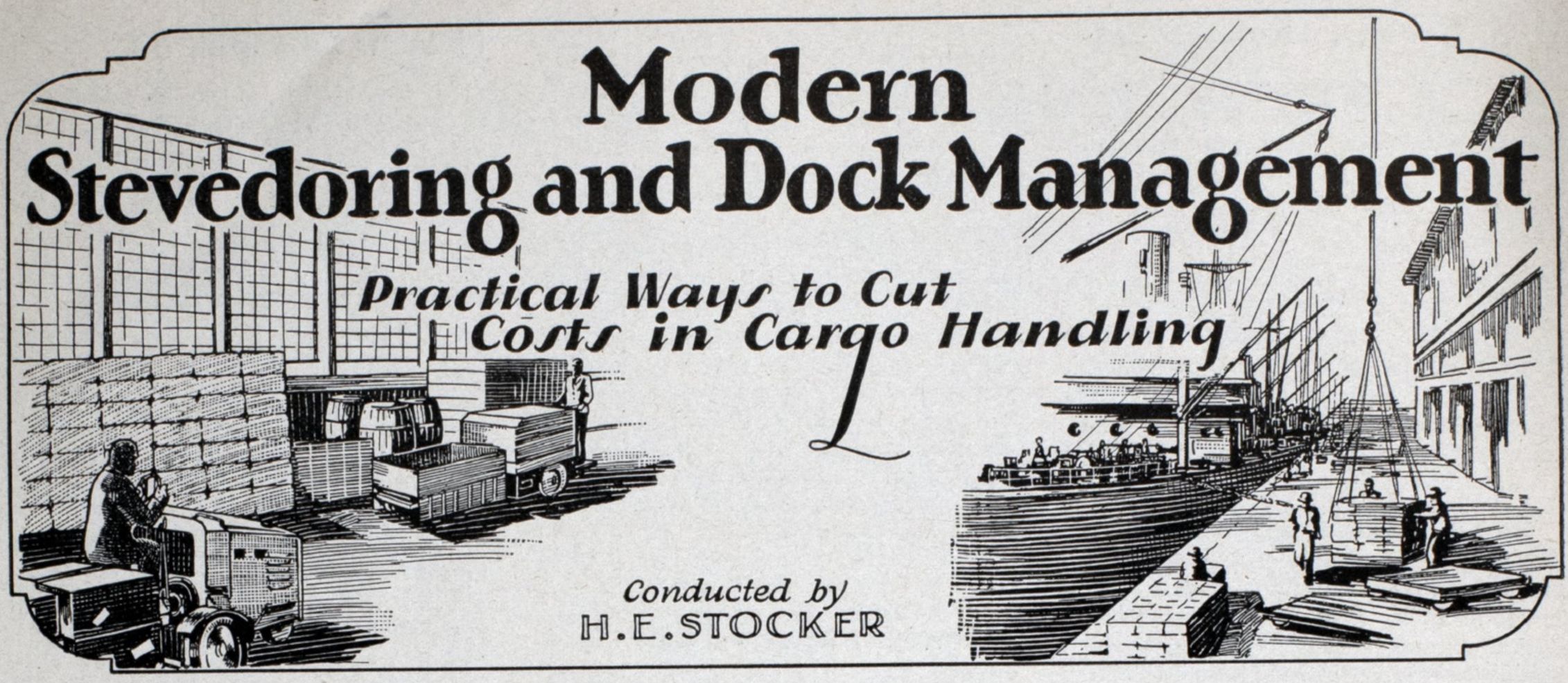
	Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
May 18, 1932	4.50@5.00	.75	3.70
April 18,	4.50@5.00	.70	....
Mar. 18,	4.50@5.00	.65	3.25
Feb. 18	4.50@5.00	.65	3.25
Jan. 18	4.50@5.00	.65	3.25
Dec. 18	4.50@5.00	.65	3.25
Nov. 18	4.50@5.00	.65	3.25
Oct. 18	4.75@5.00	.65	3.25
Sept. 18,	4.75@5.00	.75	3.47½
Aug. 18	4.75@5.00	.75	3.47½
July 18	4.75@5.00	.85	3.72½

At Philadelphia

	Coal trim in bunk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
May 18, 1932	4.50@5.00	.80	3.69
April 18,	4.50@5.00	.75	3.21
Mar. 18,	4.50@5.00	.65	3.21
Feb. 18	4.50@5.00	.75	3.45
Jan. 18	4.50@5.00	.75	3.45
Dec. 18	4.50@5.00	.75	3.45
Nov. 18	4.50@5.00	.75	3.45
Oct. 18	4.75@5.00	.75	3.45
Sept. 18,	4.75@5.00	.75	3.45
Aug. 18	4.75@5.00	.75	3.45
July 18	4.75@5.00	.85	3.70

Other Ports

May 18, 1932	
Boston, coal, per ton	$7.76
Boston, oil, f. a. s., per barrel	0.71
Hampton Roads, coal, per ton, f.o.b., piers	$4.25
Cardiff, coal, per ton	13s 6d
London, coal, per ton	—s —d
Antwerp, coal, per ton	18s 0d
Antwerp, Fuel oil, per ton	67s 6d
Antwerp, Diesel oil, per ton	82s 6d
British ports, Fuel oil	67s 6d
British ports, Diesel oil	82s 6d



Define Objectives in Keeping Records for Better Results at Less Cost

By H. E. Stocker

THE first consideration in modern office management in relation to all phases of cargo handling is definition of objectives.

In office work, the chief objectives are the performing of work satisfactorily in time for the use to which it is put and at the lowest possible cost. Satisfactory work requires prompt, accurate and courteous handling of correspondence and claims, shipping papers and all other contacts with the public, as well as the prompt preparation of all necessary records.

Stowage plans, manifests, bills of ladings and other shipgoing papers, sorting books, statistical records both graphic and other kinds are prepared to give maximum value at lowest cost. There is nothing theoretical or unduly idealistic in this conception of the objective of modern office management. These objectives are sound and are attained to a surprising degree when the higher executives of the company, department heads and minor executives either manage in accordance with principles of modern management, or permit subordinates to do so.

The objectives described are obtained by providing working conditions conducive to the best results, by determining the best way and by selecting, training and compensating the personnel so that the best results may be obtained. These things cannot be determined unless each problem is thoroughly analyzed and the facts ascertained. A thoroughly modern management determines what is really happening, as contrasted to what the head of an office *thinks* is happening

Having ascertained existing conditions, attention is concentrated on determining the one best way of doing each job. This is the application of the principle of standardization—it necessitates giving attention to several factors. 1. The office environment—lighting, heating, ventilation, noise, design of desks and chairs, drinking water and toilet facilities. 2. Determination of the one best person for a job. 3. The one best way of doing a job. 4. Training the one best person in the one best way. 5. Development of an organization which will utilize the other four factors to the maximum advantage of the company.

The first of these factors has been discussed in a previous issue of MARINE REVIEW. The second is of vital importance. If careful study is given to the problem of finding the person best fitted to do certain work, that person will naturally perform the task better than one selected in a haphazard manner.

For each job certain qualities are essential. In each person certain qualities predominate. Because of lack of understanding or appreciation of these facts, offices frequently assign a man to a job for which he is unsuited. Men are assigned to traffic work who are anything but salesmen—who dislike sales work, while a good, natural born salesman frets his life away over figures in the office.

Tests have demonstrated that persons who can perform the tests with speed and accuracy were specially fitted for clerical work, while those who could not, proved to be inferior material for clerical work in general.

Clerical work requires the type of person who is interested in minute details apparently unrelated to any main task, and requires one who can maintain this interest. Men and women who dislike monotonous work should not be assigned to such work but should be used in work varied in nature. Proper selection of personnel not only is profitable to the company but increases the total of human happiness.

Some executives believe that if a man can be hired for $3000 a year to do a certain job, that $1000 is saved as compared with a $4000 salary; though analysis of work performed however, will show that the $3000 man is costing several times $1000 a year because of his poor management and lack of good judgment. The new idea creative ability alone of the $4000 man will often liquidate his salary in a few months.

Clerks, stenographers and freight solicitors are hired by steamship companies and are given the meagerest of training. There is a one best technique and yet a dozen stenographers may be using a half dozen

or more techniques. It has been demonstrated that a well designed program of training will more than pay its way in accuracy and in the great amount of work produced.

Determination of the one best method of doing a job requires more than the customary analysis. The chief difference between ordinary management and modern management is in the thoroughness of the analysis of managerial problems. It might well be termed, "below the surface management," because it turns up profits that lie below the surface.

The best "organization" is one in which the owner is the only executive and the organization so small that the owner is familiar with the details involved in the performance of all the work.

Duties Properly Delegated

As the organization grows it becomes necessary for the head to delegate duties to others. The larger the organization the greater the necessity for a carefully planned organization relationship to prevent waste and to generate the greatest hitting form for sales. The chief mistake is either to neglect the fundamental principles of organization or to expect too much of these principles. Control is the essence of a well planned organization, large or small. The larger the organization the greater the difficulty of adequate control. The management of every organization, whether large or small, must have adequate reports and records in order to maintain proper control.

A budget planned with the recent developments in budget making in mind is essential and the most effective control af a business organization.

The purpose of budgeting is to predetermine results and then to control the affairs of a business as a whole, so that the predeterminations may be attained. Specifically, budgeting provides *definite* and *attainable*, as well as *understandable* objectives, or standards, to co-ordinate and harmonize the work of personnel in terms of profit-making; to *reconcile inaccuracies* and *contrary elements*; to measure results against standards and determine variations between them; and to eliminate unintelligent guesswork with regard to the future: all thoroughly worthy and practical goals.

Revenue constitutes the keystone in budgeting. Everything depends on "receipts" in business, and to "expend" without reference to "receipts" is to incur, or perhaps invite, disaster. What to expend should, therefore, be governed entirely by what is estimated as an income from sales or service, which in all probability can be secured and each expenditure should be in relation to all other expenditures if the maximum benefit on net profit is to result.

There are many budgets which are practically worthless. In one case an expert accountant was instructed to prepare a budget for a steamship line. He arrived at figures of fuel costs, stevedoring costs, office costs, etc. by taking the costs from a period of years. On the face of it, this method appeared sound. "Below the surface" analysis however, disclosed that the company had operated 66 2/3 per cent more ships in the greater part of the years, and that there had been a distinct change in character of cargo carried, also the ports of call were reduced. These factors of course, made the budget misleading rather than a helpful tool of management. The so-called break-even chart indices and logarithmic charts cannot be prepared by clerks but require assistance of technical men.

Graphic representation of facts in the form of curves, etc. is an effective tool of management. The interpretation of statistical information is facilitated by showing it in graphical form which shows clearly not only the relative values of any information from date to date, but shows the relative values of different kinds of information and indicates tendencies.

Graphical records become of maximum value when they are prepared with the help of one who is trained in the technique of preparation.

Photographs of proper stowing damaged cargo, cargo-handling gear, unsafe terminal or deck, and hold conditions are another form of graphic record of great value. Photographs can be used effectively by the traffic department in developing business as well as by the claim and operating departments in reducing costs.

ANYONE familiar with the vast amount of "paper work" required in the business of transportation by water will quickly recognize the rich field for his endeavors this phase of shipping might well present to the so-called "efficiency engineer" or "expert in management." But organizations like individuals are really human and do not take too kindly to so-called "expert management." The results have sometimes been less than satisfactory when outside help has been invoked to improve methods and to reduce waste.

However, waste often does exist and it behooves the management in control to look things over carefully in a calm analytical manner to see what can be done within the organization itself to eliminate wasteful processes and to increase efficiency by a better use of the human elements at hand. There is no good reason why every bit of work done should not be questioned, first as to its necessity at all, and second by whom and in what manner it is now being done. A surprising number of things of value in pointing to ways of reducing cost will be discovered by an application of this simple workable formula.

Editor's Note

Activity At New Orleans

Business of the port of New Orleans showed substantial improvement during April. Many commodities moving over the port's wharves showed marked increases. Among the imports, non-metallic minerals increased 134,483 tons; vegetable food products increased 26,035 tons and textiles and miscellaneous commodities increased 694 tons and 223 tons respectively. Among the exports the largest increase was in vegetable food products which increased 35,460 tons. Textiles and ores, metals and their manufactures exported increased 12,872 tons and 2198 tons respectively.

The inner harbor navigation canal was again the center of great activity. During the month, 1141 vessels having a total tonnage of 391,889 tons used this facility. There was a substantial increase in arrivals of inland watercraft of over 25 tons. During the month, 367 vessels, having a total tonnage of 149,352 tons arrived in port, an increase of 13 vessels and 10,477 tons over April 1931.

Of the 200 seagoing vessels, which arrived during the month, 119, or more than 59 per cent, were under American registry. These American ships represented more than 64 per cent of the total gross tonnage.

Office of Potter & Gordon Inc., steamship brokers and agents has been removed to 40 Rector street, New York city.

Speeding Up Cargo Discharge by Improved Grab Bucket

DISCHARGING bulk cargoes by grab buckets has been going on for a number of years in the principal seaports and industrial centers of the world and the list of commodities that can be handled by grabs is steadily increasing and becoming more varied. The latest addition to that list known by the writer is pit-props and scrap-iron.

One drawback to the use of grabs has been the inability to reach in under the deck and the lack of means to quickly and positively adjust the capacity of the bucket for different products to be handled. Among the commodities generally shipped in bulk, are a number of the same specific weight while their structure is entirely different; unbroken iron ore, lump coal and fine coal, etc. It is obvious when discharging such cargoes by grabs that the grabbing capacity should be adjusted to suit the particular commodity to be handled. As a rule the ordinary grab does not reach more than a few feet under the deck and the balance of the cargo must be trimmed within reach by specially constructed scoops fitted to the grab, by manual labor or some special mechanical trimming equipment.

Bulk Cargoes at Rotterdam

In Rotterdam a great quantity of bulk cargoes handled and especially coal, ore, fertilizers and chemicals are exclusively handled by grabs. A recently invented grab bucket now in use at this port has practically eliminated all trimming and at the same time increased the quantity discharged by 50 to 75 per cent. It is a self trimming grab with adjustable grabbing capacity.

It was found that with the new type of grab many of the drawbacks experienced with the older type were eliminated. The commodity could be scraped from under the deck before lifting and the grab could be quickly adjusted to the right grabbing capacity for the particular commodity to be handled. Furthermore the grab mechanism is foolproof.

The top shaft of the grab is provided with a cast or forged steel wire-rope carrier at both sides. These carriers of special shape revolve on the shaft. When the grab is provided with four pulleys, two for each closing-tackle (coal grabs), one pulling part of the tackles can be suspended on the carriers. If three pulleys are fitted for each closing-tackle (iron ore grabs) one or two pulling parts of these tackles can be suspended on the carriers.

Ease of Adjusting Capacity

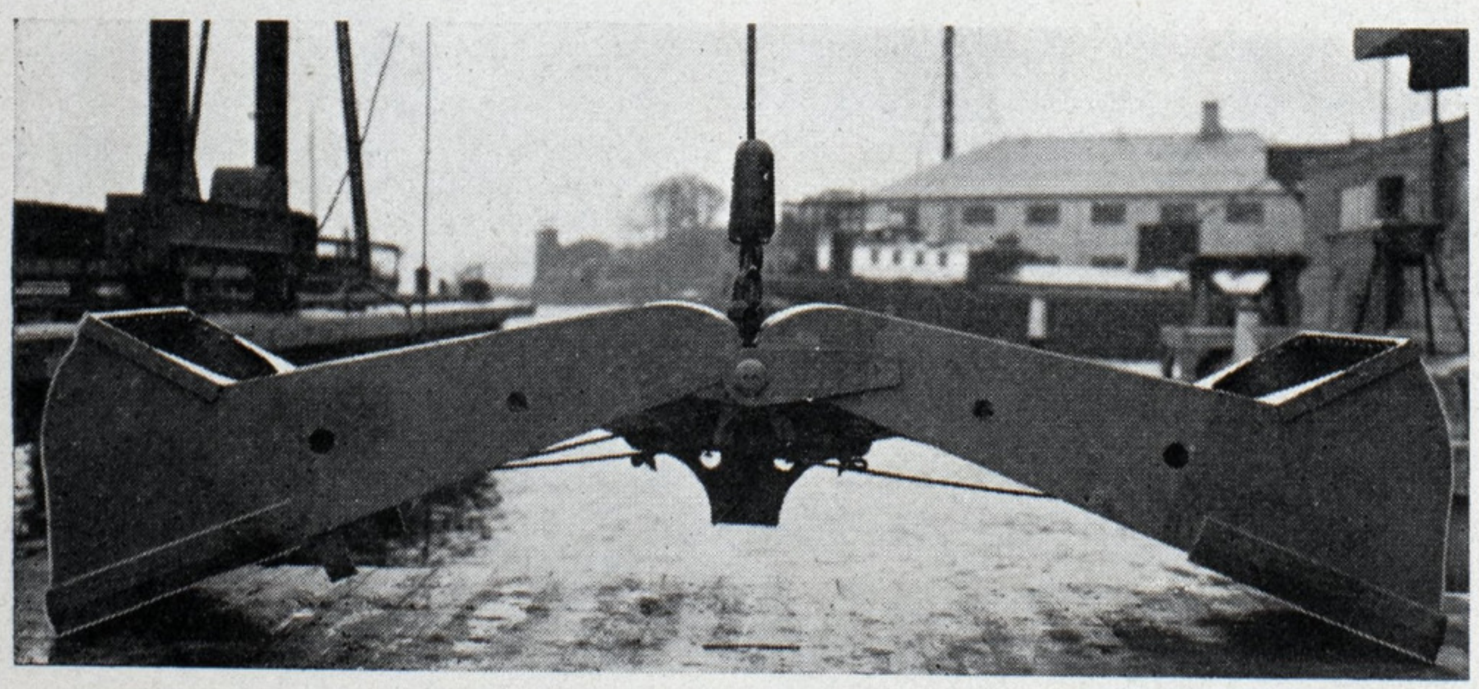
Consider a grab fitted with two pulleys for each closing-tackle. When the grab is in full open position, the only manipulation necessary for altering the grabbing capacity is to slacken that part of the closing-tackle which has a fixed connection in one of the scoops of the grab, and to swing it on top of the wire-rope carrier. This can easily be done within half a minute at both sides.

Under these conditions when the grab is closed the pulley of the closing-tackle together with part of the wire of the tackle, remains in perfect rest and is consequently out of action. Instead of the grab being closed by two tackles working with two pulleys each, it is closed by two tackles working with only one pulley each, so that the grabbing capacity has been reduced to 50 per cent. Under these conditions only 50 per cent of the length of wire will have to be taken out of the grab for a complete closing stroke.

If such a grab is fitted with three pulleys for each closing tackle, one or two pulleys of the tackles can be switched out of action, in which case the grabbing capacity can be brought from 100 per cent to either 66 or 33 per cent, while the length of wire to be taken out of the grab for a complete closing stroke is reduced accordingly. For grabs, fitted with four pulleys for the closing mechanism, the wire rope carriers may be installed in suitable positions between the top shaft and the closing pulleys, in order to be able to obtain a percentage of grabbing capacity ranging between 100 and 50.

This grab was tested and tried out at Rotterdam under severe conditions by a stevedore of worldwide reputation for good work and the holder of many records for quick handling of general as well as bulk cargoes. This company after thorough trial, ordered 20 grabs of this design and later added another 20 to its already large stevedoring equipment. Grabs of this type were ordered, after careful investigation to handle coke for the municipal gas plant and for harbor equipment at one of the European capitals.

By the introduction of this grab for more efficient bulk cargo handling a long felt need has been met and it is only a question of time before it will be widely used. In the accompanying illustration it will be noted that scraping scoops assume an almost horizontal position; the grab is opened so wide in fact that the outer edges of the scoop almost touch the ship sides.



Efficient Wide Spread Type of Grab Used at Rotterdam

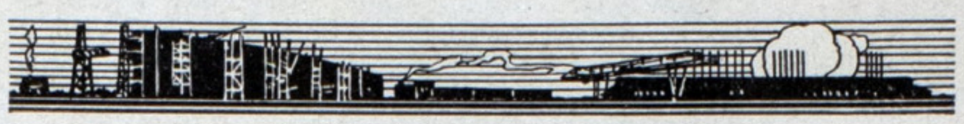
E. J. McCormack Honored

Emmett J. McCormack, vice president and treasurer of Moore & McCormack Co. Inc., operating one of the largest fleets out of north of Hatteras ports has been signally honored by two marine organizations.

At the annual meeting of the propeller club of the United States, port of New York, May 12, he was elected president. On April 26 at the annual meeting of the Maritime association of the port of New York, better known as the New York Maritime exchange he was unanimously elected president of that important body. In this position he succeeds John Dowd, who has served as president for the last eight years. Others elected were Howard E. Jones, president, of James E. Elwell, vice president, and Fred B. Dalzell of the Dalzell Towing Co., treasurer. Five directors are Andrew M. Campbell, F. D. Denton, John F. Dunphy, Frank Henderson, Herbert B. Walker and William H. Weekes.

A. J. Mouris, for a number of years vice president of J. H. Winchester & Co. Inc., 17 Battery Place, New York, has been elected vice president of the Newtex line in addition to his present duties.

Useful Hints on Cargo Handling



THE following abstract of a letter to *Fairplay* adds information on hatch covers published in this section.

Speeding up of operations incidental to loading or discharge of cargoes is important and since the working day in port is only eight hours, time saved in this way is equivalent to three times the same amount in sea time. By getting a vessel back more rapidly to the primary business of transporting goods from port to port, the particular voyage may be improved and the number of voyages increased.

In this connection too little consideration has been given to the arrangement of a ship's deck. Hatch openings of a modern cargo liner are still generally secured and covered by battening bars, wire lashings, tarpaulins, numerous wood covers, web beams, etc. The larger they are the more time is taken in opening and closing them daily in port. Some modern vessels have 2000 wood covers to handle not to mention all the accessories. The handling costs in such cases are very heavy and the time lost to the ship means that great capital value lies idle, dock space is occupied, and stevedores standing by are unproductive. As much as one working day in five is lost during the loading or discharge of 5000 tons of general cargo in one port. This loss of eight hours is equivalent to that of 24 hours in the life of a ship.

The ideal hatch cover must be strong enough to withstand any sea and to be watertight without use of tarpaulins. It must be safe and easy to handle and rapidly and conveniently stowed. Steel hatch covers would fulfill these conditions and these are of three types.

1. Single piece hinged cover requiring lifting tackle.
2. Multiple steel cover comprising as many pieces as a wood cover.
3. The rolling steel hatch cover, in two or four sections which can be operated without the use of winches, having neither tarpaulins nor web frames. Any section can be rapidly opened or closed. Moreover these covers can be moved to the sides of the ship as cargo platforms, or, where deck space must be kept clear, can be rolled and pivoted at the end of the hatch way. It is obvious that this type of hatch cover is best suited to the purpose of time saving in port.

Grabs which engage the ends of large rolls of paper used in making boxes, are used to prevent damage to the paper and to make possible handling the rolls rapidly. These rolls weigh between 3500 and 4000 pounds and are easily lifted by the grabs.

THIS page is being devoted to short items on all matters having to do with the more efficient turnaround of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Adequate Claim Prevention

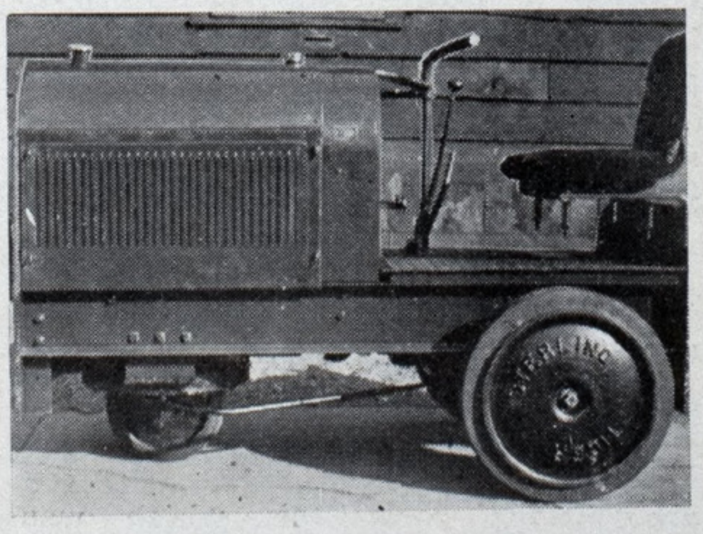
ADEQUATE claim prevention is obtained only by a proper tie up between the terminal organizations and the claim department. All claims should be analyzed thoroughly to determine causes of loss or damage and measures taken to prevent similar loss and damage in the future. Finally, the measures decided upon should be followed relentlessly to make certain they become operative.

This takes time and effort, but is well worthwhile as proved by the records of lines with excellent claim records.

Using Equipment and Labor

GRAVITY roller conveyors in ten to fourteen-foot lengths are helpful in unloading trucks. The conveyor is either run from the tailboard to the pile or after space on truck is cleared, the conveyor is used to carry the packages to the tailboard. In one case, one laborer was saved by using a conveyor from the tailboard. The unloading of trucks is expedited about 30 per cent by the use of these short length conveyors.

Flexibility is essential to successful maximum efficiency in terminal operation. Tractor drivers who do nothing but drive tractors, and are idle when the tractor is idle, are a source of waste. Checkers on a small terminal who do nothing but check cargo, should be utilized in the preparation of reports, graphic records and in other ways. Keeping men busy is also good for the men, and *good* men like being busy.



Three Wheel Gasoline Tractor

Bottles of gingerale explode when placed in a warm compartment.

A smooth working *system* is not possible on a badly congested terminal. It is largely a question of making the best of conditions encountered from time to time.

Provision of gaps on a pier as a turning area for trucks is advisable where conditions make this arrangement possible.

Guarding and Checking

CIGARETTES, olive oil and other cargo liable to pilferage must be kept under watch as much as possible. Packages should be piled in regular piles so if any cases are removed, it can be easily detected.

Damage to bagged cargo was caused by slingloads striking projections on shaft alley. Further damage was prevented by stowing bagged goods on following ships, in the forward holds.

Tractors and trailers are operated successfully on congested terminals. Small three wheel tractors can go almost any place a two wheel hand truck can go. A turning radius overall of 52 inches permits turning in a very limited area. When tractors and trailers are operated intelligently, the number of men used is reduced, the work is speeded and congestion is reduced.

Exceptions should be specific. An exception "Second hand cases" is of no value. If the exception reads—"Second hand cases—One strap missing," the exception becomes of value.

Varnish expands, causing damage to container. For this reason varnish should be stowed in a cool place.

Up and Down the Great Lakes

Reduced Traffic Through Canals—Canadian Coastwise Law—Lake Levels Lakes-to-Gulf Waterway—Vessel Grounds—New Freight Service

TRAFFIC started through the Canadian and United States locks at Sault Ste. Marie, on April 17; four days later than last year for the Canadian lock and seven days later for the United States lock. The Welland ship canal opened April 7, two days earlier than last year and the St. Lawrence canal on April 14, three days earlier. The Welland ship canal for the month of April showed an increase of 94,665 tons, but traffic through the Sault Ste. Marie locks declined by 553,336 tons and through the St. Lawrence canal by 40,133 tons. The wheat shipments were light through all three canals. Whereas during the month of April, last year, 15,108,624 bushels of wheat passed through the Sault Ste. Marie canals, American and Canadian, only 5,313,062 bushels of wheat passed through for the month of April, 1932.

Drastic has been the decline in iron ore cargoes this year over a year ago. From the Lake Superior district only 44,073 tons of ore came down the lakes during April carried in three ships all for Lake Michigan ports. Compare this movement with 175,921 tons for the month of April a year ago. The first ore cargo of the season for a Lake Erie port arrived on May 4.

Canadian Coastwise Law

Action is under way in the house of commons in Ottawa to amend the Canada shipping act in order to eliminate foreign owned vessels in Canadian coastwise trade on the Great Lakes.

If this bill goes through and becomes law it will have a serious effect on American vessels on the Great Lakes which have been accustomed to carry Canadian grain from ports at the head of the lakes to Buffalo and transporting it to Montreal.

Alfred Duranleau minister of marine of the Canadian government, minces no words in describing the intent of this legislation. "The purpose of the proposed legislation," he said, "is primarily to bring the Canadian law with regard to the coastwise trade of Canada on the Great Lakes up to the level of the American coastal law.

"Under the American law," he continued, "it would be illegal to carry American grain from Chicago to Port Colborne, unload it and carry it to another American port in British ships; but under the Canadian law as it stands today, it is possible and it actually happens that a very considerable amount of Canadian grain is carried from Fort William and Port Arthur to Buffalo and thence, after being reloaded into canal size ships, to Montreal and exported—all transportation being in American ships."

April Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of April as follows:

Lakes	Feet above mean sea level
Superior	601.90
Michigan-Huron	578.38
St. Clair	573.95
Erie	571.61
Ontario	245.82

Lake Superior was 0.12 foot lower than in March and it was 0.38 foot higher than the April stage of a year ago.

Lakes Michigan-Huron were 0.17 foot higher than in March (since 1860 the April level has averaged 0.20 foot higher than March); and they were 0.68 foot lower than the April stage of a year ago.

Lake Erie was 0.14 foot higher than in March and it was 0.47 foot higher than the April stage of a year ago.

Lake Ontario was 0.56 foot higher than in March and it was 0.85 foot higher than the April stage of a year ago, 0.17 foot below the average stage of April of the last ten years.

The JOLIET, Capt W. T. Mooney, a 500-foot iron ore freighter chartered from the Cleveland-Cliffs Iron Co., docked in Chicago recently with more than 6300 tons of newsprint for the Chicago Tribune. This is claimed to have been the largest amount of newsprint ever carried in a single vessel.

Great Lakes to Gulf

The Illinois river development of the Great Lakes-to-Gulf waterway will be among projects pushed by the war department during the next fiscal year, according to testimony given in Washington recently before the appropriations committee, which was considering the war department appropriation bill for this important project.

Of the $60,000,000 carried in the bill for prosecution of work on rivers and harbors, a total of $4,650,000 has been allocated for completing the 9-foot channel between the mouth of the Illinois river and the Great Lakes

Bunker coal at Lake Erie ports has been reduced fifty cents per ton over last year. The price of bunker coal on Lakes Ontario and Michigan, at the fuel docks, is $4.75 per ton compared with $5.25 per ton last year. Bunkers taken from car dumpers will be $4.25 per ton this year as compared with $4.75 last year.

A veteran marine engineer of the Great Lakes, Joseph Normand, died suddenly on May 10. He was chief engineer of the tug NEBRASKA, flagship of the Great Lakes Towing Co. fleet. He was 68 years old. He was active in the affairs of the Licensed Tugman's Protective association. He is survived by his wife and three daughters.

Vessel Runs Aground

One of the first accidents of the season was grounding of the W. H. BECKER, in upper St. Marys river, in a thick fog, May 14. The BECKER was upbound with coal for Duluth The point where she struck is known as Vidal shoals.

After 500 tons of her coal cargo had been lightered the BECKER was released and was towed to Big Point, Mich. where divers placed a cement patch over a hole in the forward tanks.

While the tug FAVORITE on May 16, was towing the W. H. BECKER to Duluth, Capt. Alex Cunning, master of the tug dropped dead from a heart attack. Captain Cunning had been in active charge of the successful job of salvaging the BECKER and his death came as a great shock to his principals, the Great Lakes Towing Co. and to all of his many friends on the Great Lakes. He was considered one of the most expert captains in salvage work on the lakes. His judgment in matters of this kind was greatly respected. The BECKER arrived safely at Duluth on May 20 where she discharged her coal cargo

A New Freight Service for Loaded Truck Trailers

The Nicholson-Universal Steamship Co. has inaugurated a new freight service between Cleveland and Detroit. The principal feature of this service is the transportation of loaded truck trailers on the company's auto carrying vessels. The plan is to extend this service ultimately from Oswego, N. Y. to Chicago.

The GRAHAM C. WOODRUFF after considerable reconditioning and refitting at the Great Lakes Engineering Works, River Rouge, Mich. will have the distinction of being the largest combined auto and package freighter on the lakes. This vessel, nearly 600 feet in length, is fitted with four decks and four elevators and can carry 50 loaded trailers on her top deck,

The Nicholson company, expects a brisk traffic of this character where the loaded trailers can be brought to the ship's side by tractors. At the point of destination the loaded trailers are hauled off by tractors to their final destination. The service will call for a vessel leaving Cleveland and Detroit each night.

Rear Admiral Chester Dies

The oldest Annapolis graduate, Rear Admiral Colby M. Chester, retired, died on May 4, at the age of 88, at the home of his son, Arthur T. Chester, Rye, N. Y.

He served under Farragut in the Civil war and commanded two ships in the Spanish American war. Throughout his long career he held many important naval posts and retired for age in 1906. The years after his retirement were remarkable for notable achievements. Among other things he acquired the famous billion-dollar Chester oil concession in Turkey, later abrogated; he demonstrated the falsity of the claims of Dr. Cook to the discovery of the North pole, and at the age of 85 he sponsored a project to build a $200,000,000 trans-oceanic canal through Colombia.

Admiral Chester was appointed to the United States naval academy from his native city of New London, Conn., in 1859, and was graduated in 1862. Commissioned as an ensign he joined the RICHMOND and participated in the battle of Mobile bay and the capture of Fort Morgan in 1864. Burial with naval honors was at Arlington.

Capt. Frederick R. Goodrow died at his home in Detroit May 17 at the age of 64. He last sailed the PEGASUS of the Interlake Steamship Co. fleet.

The Great Lakes offices of the American Bureau of Shipping have been moved from the Union Trust building to the Rockefeller building. H. N. Herriman is vice president of the American Bureau of Shipping and is in charge of all the bureau's activities on the Great Lakes.

Capt. Herbert W. Emigh, master of the steamer WILLIAM F. FITCH of the Jenkins Steamship Co. died on May 20, at the marine hospital in Detroit. He was 50 years of age. As mate of the MATAAFA, 27 years ago Captain Emigh gained wide recognition for his heroic work in saving lives of several men on his ship.

Capt. John Thorpe, 60, a pioneer captain on the Great Lakes, died April 28 in Chicago. Until his retirement last year, he had been a master on the Great Lakes since 1903. Before that he sailed on the St. Lawrence river. His last captaincy was on the VIRGINIA, of the Pere Marquette line, Manistee, Mich.

Marine insurance agents in the Milwaukee district report a slow coverage at this time on Great Lakes freighters. Predictions made at Milwaukee are that the freight tonnage on the Great Lakes this season will be about one-fourth of normal, and may result in less than the usual amount of marine insurance.

Great Lakes Dredge & Dock Co., Chicago, has announced settlement of wage difficulties between dredging companies operating on Great Lakes and labor unions. Both operators and unions have accepted a new wage scale, which is a reduction of about 20 per cent from the former schedule, and work already has been resumed.

Issues Pacific Light List

The 1932 edition of the light list for the Pacific coast has recently been issued, with changes of assistance to mariners. The new light list includes not only the lighted aids and fog signals on the entire Pacific coast of the United States, but unlighted buoys, beacons, and daymarks, which formerly were listed only in separate publications. The unlighted aids of the Hawaiian and other Pacific islands are also included this being the first time in recent years that this information has been available in printed form.

Alonzo Arnold, chief engineer of the first vessel operated by Pickands, Mather & Co. died at the age of 84, at his home in Marine City, Mich. on May 11. He was known throughout the lakes as one of the best marine engineeers of his day.

The Detroit and Cleveland Navigation Co. began overnight passenger service between Detroit and Buffalo on May 10. Service between Cleveland, Mackinac island, Saint Ignace and Chicago will begin June 29.

American Merchant Tonnage Shows Slight Decline

A slight decline in documented tonnage of the American merchant marine, principally in the unrigged class which off-set the increased tonnage of motor vessels, was reported for the nine months ended March 31, by A. J. Tyrer, commissioner of the commerce department's bureau of navigation.

The report shows that on June 30, 1931 there were 25,471 documented merchant vessels of 15,908,256 gross tons, while on March 31, 1932 there were 25,109 vessels of 15,852,425 gross tons, a decrease of only 362 vessels and 55,831 gross tons. The small amount of tonnage as compared to the number of vessels was due to the increased size of vessels now being built as compared with those built in former years.

Steam vessels, next to the barge or unrigged class, were hardest hit as to number although the tonnage remains approximately the same. On June 30, 1931 there were 5890 vessels of 12,474,753 gross tons as compared to 5803 vessels of 12,473,157 gross tons on March 31, 1932, a decrease of 87 vessels with a loss of only 1596 gross tons.

Motor vessels however are decidedly on the increase and have been for some years. On March 31, 1932 there were 12,370 documented vessels of 1,065,328 gross tons as compared to 12,346 vessels of 1,053,266 gross tons on June 30, 1931, an increase of 24 vessels of 12,062 gross tons.

There is also a noticeable tendency from foreign to coastwise trade, there being 3962 vessels of 5,582,354 gross tons engaged in foreign trade on June 30, 1931 while on March 31, 1932 there were 3930 vessels of 5,401,014 gross tons so engaged. The number of vessels in coastwise trade increased from 13,233 vessels of 10,204,591 gross tons on June 30, 1931 to 13,550 vessels of 10,338,501 gross tons on March 31, 1932. This represents an actual increase of 327 vessels of 133,910 gross tons in the coastwise trade in spite of the fact that there was an actual decrease in merchant vessels and tonnage.

Capt. C. M. Hayward Dies

Capt. C. M. Hayward died suddenly on April 29. For 30 years he was in the employ of the Standard Transportation Co. During that time he had sailed as master of various ships from the old square riggers down to modern tankers. For the past ten years he had been port captain at New York.

He was deeply interested in the problems of maritime safety and for a number of years prior to his death, had served as chairman of the port safety committee.

Equipment Used Afloat and Ashore

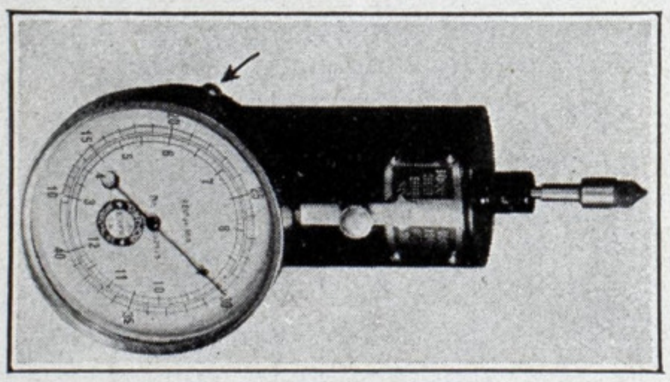
Hand Tachometer—Lifeboat Radio Sets—Spray Painting—Stabilizing Large Ships—Protective Coatings—Handling Barrels—Combustible Gas Indicator

A NEW direct reading hand tachometer for testing rotating speeds has recently been developed by the Amthor Testing Instrument Co., 309 Johnson street, Brooklyn, N. Y. It incorporates the new feature of automatic fixed reading, whereby the speed reading is automatically fixed on the dial after each time the instrument is used.

On an ordinary tachometer the pointer drops back to zero once it is taken away from the machine being tested. In this way the readings are lost as the user has nothing to show and must trust to memory. But with the new type shown here, the pointer does not return to zero. It stays fixed on the dial for anyone to see, and shows what the exact speed was. This eliminates doubt as to what the dial previously showed or whether it was being correctly read during the test, since it can now be read without haste, and exactly.

Readings Held on Dial

Since it is no longer necessary to keep the eyes focussed on the dial, the tachometer can now be used in the dark if necessary, or in places where it is awkward to hold and read the instrument at the same time. It further facilitates the testing of speeds



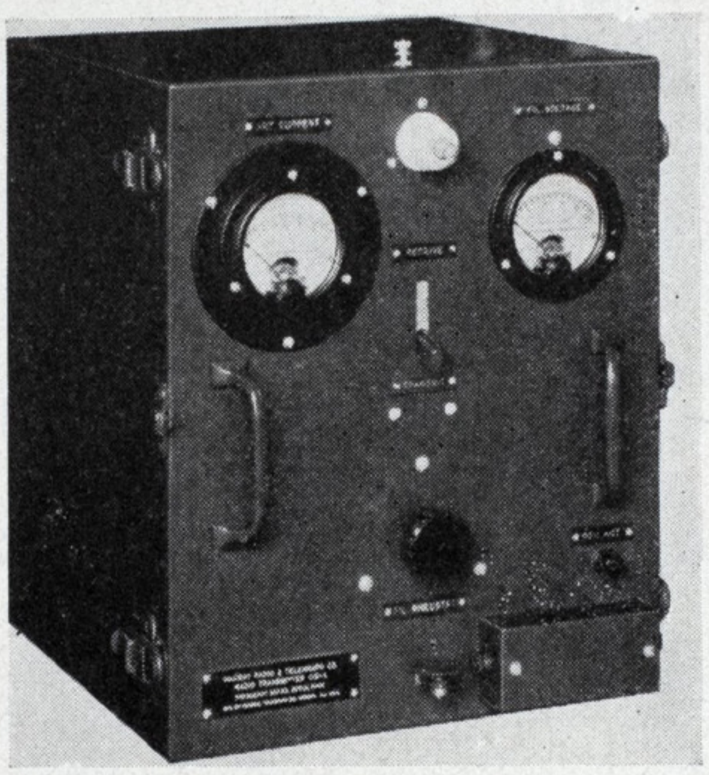
New Hand Tachometer for Revolutions

of such rotating machines as engines, motors, turbines, generators, propellers, blowers, pumps, etc.

The dial is graduated to read directly in revolutions per minute but the instrument is equipped with all accessories so that "feet per minute" surface belt speeds can be taken. The tachometer has four speed ranges, each of which is separately read over the entire circumference of the dial, thereby giving a great deal more graduation space, and consequently closer readings. Each is constructed with a perfectly balanced cross pendulum governor movement, is hand calibrated for accuracy, and is dead beat in action. Various ranges can be had to directly measure speeds as high as 12,000 revolutions per minute.

Lifeboat Radio Sets for Liner Manhattan

FOUR kinds of radio equipment are now being installed by Mackay Radio & Telegraph Co. engineers on the new United States lines' liner MANHATTAN. These installations include lifeboat radio equipment, standard radio equipment, emergency radio and Kolster radio direction finder. This work is being done at the

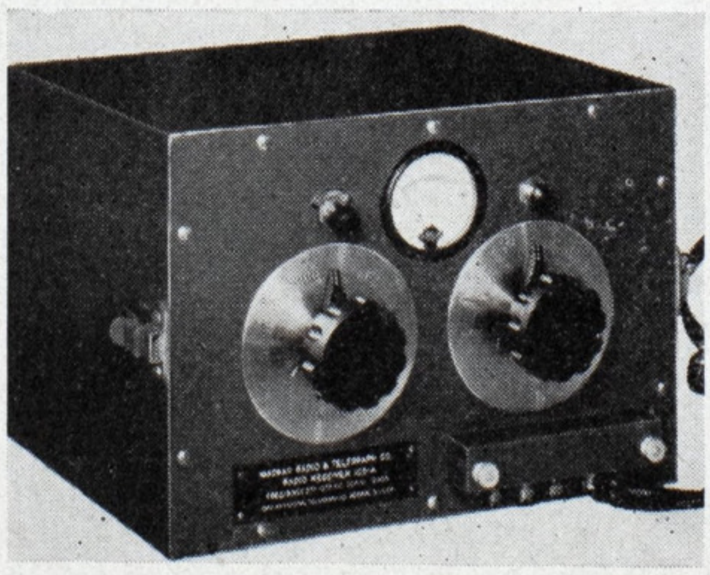


Lifeboat Radio Transmitter, Type 103-A

New York Shipbuilding Co., Camden, N. J.

Of special interest is the lifeboat equipment on two power lifeboats. This is being installed to comply with the regulations of the British board of trade which require that each vessel having ten to nineteen lifeboats must have one of them equipped with power and must carry a radio sending and receiving set.

The transmitter and receiver are each of a new type. The transmitter operates on a frequency of 500 kilocycles, more commonly referred to as 600 meters. It is small and compact and is all contained in a waterproof case with all of the controls on the front panel. It is powered by a small storage battery and a small generating set.



Lifeboat Radio Receiver, Type 103-A

The receiver is a three-tube set with the B batteries contained in the case. It operates on a wave band of 550 to 1000 meters. The antenna is carried on collapsible masts.

In the event of a disaster, the sets will prove invaluable in enabling the lifeboats to keep in touch with rescue ships and with each other. The installation is expected to be completed about the first of June.

Spray Painting Outfits for Marine Work

TWO new spray-painting outfits designed especially for marine work have recently been developed by The DeVilbiss Co., Toledo, O., manufacturers of spray-painting equipment. In speed and efficiency, shipbuilders and shipowners will find these outfits an aid in the constant maintenance work that a ship requires. Easily portable, these outfits can be adapted to all interior and exterior marine jobs. They embody the latest principles and scientific methods of construction, to produce quality work at maximum speed.

One of the outfits is designed for use where compressed air is already available. It is a one-man portable outfit with a 5-gallon paint tank and the necessary equipment to operate one DeVilbiss type AV spray gun. It is readily adaptable to hull painting, cabin decoration and any other painting needed on a ship. A wide working range is afforded by ample air and fluid hose.

The second outfit serves the same purposes but is equipped with necessary air compressing equipment, driven by a 2-horsepower electric motor, compactly mounted on a four-wheel hand-drawn truck. The same outfit, operated by a gas engine, is available if desired. Both of these sets will give excellent results under continuous operation.

According to an announcement made April 21 by Charles J. Pannill, executive vice president of the Radiomarine Corp. of America, four RCA radio direction finders are to be installed on vessels on the Merchants and Miners' Transportation Co. These vessels are the steamships UPSHUR, SOMERSET, HOWARD and JUNIATA.

Stabilizing Large Vessels by New Type Control

THE possibilities of stabilizing large ships by means of a new type thyratron control equipment, utilizing vacuum tubes and a small gyroscope, was demonstrated recently by E. F. W. Alexanderson, consulting engineer of the General Electric Co. in connection with the banquet of the American Society of Naval Engineers.

Using a small laboratory model, Dr. Alexanderson was able to imitate the rolling of a large vessel and show how his device not only would immediately restore the ship to an even keel but keep it stable regardless of wave motion. His plan is the use of fins, designed like streamline rudders, attached to opposite sides of a ship, or using the force of gravity by changing of weights which may take the form of pumping water from one tank to another.

In using the fins, these tilt up or down according to the roll of the ship, very much as the wings of a seagull which keep the bird in perfect balance in the air. The movement of these fins is actuated by a small gyroscope, which relays its tiny impulses, greatly amplified by means of the thyratron control, through wires to motors built inside the fins. Thus, if the ship should be inclined to roll to one side, the fins, would immediately be tilted down on one side and up on the other and vice versa, as reversed conditions in the wave movement occur.

Fins could be installed on the outside of existing ships without great expense. The slowing up of the ship due to the resistance of the fin in the water has been estimated from data available on streamlining, and also from direct experiments. Results obtained in these several ways indicate that the useful lateral force of the rudder or fin is thirty times as great as its resistance when in its neutral position. Calculated on this basis it appears that a 23-knot ship with 50,000 horsepower would be delayed but 40 minutes in a transatlantic voyage, and a 30-knot ship with 180,000 horsepower but 10 minutes. This is on the assumption that the voyage was undertaken in a smooth sea and the stabilizer not used.

New Protection Coatings

SERVICE afloat is particularly hard on all ferrous parts in the matter of deterioration. Consequently efficient protective coating has been widely sought with varying success. It is therefore of special interest to call attention to a comparatively recent development in this art, presented by the Dempney Company of America, Hyde Park, Boston.

This company has prepared two protective coatings. The first of these, under the trade name of Apexior No. 1, is a hot water and steam resistant paint for steel and iron. In the marine field it is applied to the internal surfaces of boiler tubes and drums, also to turbines which are exposed to the action of hot water or steam. It is also used on the exteriors of diesel engine cylinder liners. It prevents rust and deterioration of the metal surfaces, but does not retard the transfer of heat. It is unaffected by any harmful elements that might be present in the water or steam, or the ratings, pressures and temperatures at which the boiler may be operated.

The second protective coating is known under the trade name of Apexior No. 3. This is a preservative paint for steel which is exposed to moisture under 125 degrees Fahr., hot dry gases up to 450 degrees Fahr., or atmosphere under shelter. It is highly resistant to the action of cold water, fresh or salt, acid fumes, acid and alkali solutions of moderate strength and prevents galvanic action, for instance, on stern portions of a ship. It is used in the marine field for the prevention of rust and corrosion of condensers, cold water tanks, pumps, sea chests, diesel engine jackets, boiler fronts, sweating pipes, air cooling boxes, fresh water tanks, chain lockers, and stern portions of hulls.

Barrel Handling Machine Can Carry and Tier

A SPECIAL machine for handling barrels, kegs, drums and rolls has been introduced by the Clark Tructractor Co., Battle Creek, Mich. The powerful mechanical hand (adjustable for packages of different size) palms the barrel neatly, tilts it back slightly to insure easy riding, and the truck travels with its load at a rate of from one to six miles per hour. At its destination a two-ton load may be tiered as high as 50 inches in 20 seconds, the lifting and tilting mechanism being operated by hydraulic pressure supplied through an oil pump.

This barrel handling machine is regularly built on the Clark two-ton tiering truck equipped with rear-wheel drive and four-wheel steer, but can be supplied on other Clark tilt truck models and may be built to tier higher than 50 inches if desired.

The rig is gas driven to insure 24 hours' continuous operation. The power plant is a 4-cycle, 25 horsepower tractor type motor. Wide tires insure smooth operation and the compact construction makes it possible to use the truck in narrow aisles and on crowded platforms. It negotiates ramps easily and is particularly useful in moving barreled goods on the dock or in the warehouse and in loading freight cars.

Combustible Gas Indicator for Use on Shipboard

A NEW instrument has been developed by the Mine Safety Appliances Co., Braddock, Thomas and Meade streets, Pittsburgh, for quickly determining the conditions of atmospheres with respect to explosibility where flammable vapors and gases are suspected or may be present. This instrument, which is illustrated herewith in a practical application, is designed to quickly and accurately sample and test flammable vapor-air mixtures for explosibility.

It will show whether the atmosphere under test is below the lower explosive limit, while at the same time indicating how near it is to being explosive. It will show whether it is within the

Testing Oil Tanker for Explosive Gas

explosive range; that is, if it is an explosive mixture; and also whether it is above the upper explosive limit.

Direct reading, requiring only a few seconds to make a test, the instrument is light in weight and easily operated. The cover is removable and the instrument can be comfortably carried by a suitable harness. As much as 60 feet of sampling line may be attached for testing atmospheres from inaccessible places. By squeezing the aspirator bulb a sample is drawn rapidly through the flexible metal tubing. There is no lag in the indicator reading except the time required to draw the sample through the tube.

The instrument has two platinum wire filaments which are heated to a relatively low temperature by current from two dry cells, one of the filaments being exposed to the action of the gas sample. Combustible gas in the sample is oxidized on this platinum wire increasing temperature from this combustion increases the electrical resistance of the wire. This increase in resistance is proportional to the amount of flammable vapors in the sample and is measured by a milliammeter, the scale of which is calibrated

Personal Sketches of Marine Men

Emil Lederer, Senior Director, Hamburg-American Line

By Ben K. Price

NO truer compliment can be paid any man than his unanimous selection as leader by his peers who have worked with him.

AS supreme authority of the transatlantic passenger conference both his experience and judgment will be tested to the limit.

HIS appointment to the position of senior director of his own company has been due solely to demonstrated ability.

RECENT appointment of Emil Lederer, senior director of the Hamburg-American line, New York, as chief executive of the transatlantic passenger conference in the United States and Canada focuses attention on a man long prominent in the marine world on both sides of the Atlantic and one who has been affiliated with ocean transportation for more than 47 years.

Born in Tereschau, Bohemia, of German parents, Mr. Lederer came to this country as a mere boy in 1882, a selection of his family to represent them at the wedding of an elder son who was already living in the United States. The youngster liked New York so much better that he pleaded with his mother to allow him to remain, which she did, with the proviso that he finish his school education.

Hence, for two years he went to school in New York city. In his spare time he learned the rudiments of steamship business in his brother's banking office, which later, incidentally, was to become a branch of the Manufacturers' Trust Co. of that city.

His first real job with the shipping industry came upon his graduation from school in 1885. He became employed by Phelps Bros. & Co., New York, general agents for the Carr and Sloman lines, as well as for the Navigazione Generale Italiana. The Carr and Sloman lines maintained services between New York and Hamburg up until their absorption by the Hamburg-American line.

Two years later, Mr. Lederer joined the staff of the Holland-American line as traveling passenger agent and later became manager of its cabin department. For seven years he remained with this company, whereupon he took charge of the extensive agency organization of the Hamburg-American line in the United States and Canada and also of the management of the company's third class department.

Later he advanced to the position of assistant general manager, passenger traffic manager and vice director. In this latter capacity he represented the Hamburg-American line in the transatlantic passenger conference and served as chairman of the railway and immigration legislation committees of the conference.

In 1920, when the Hamburg-American line entered into an agreement with the Harriman interests for the operation of joint services, Mr. Lederer became vice president in charge of the passenger traffic for the United American Lines Inc., which acted as general agent for the Hamburg-American line in the United States and Canada. When the United American Lines Inc. was absorbed, in 1926, by the Hamburg-American line he was appointed a member of the executive board of directors of the Hamburg-American line in New York.

Mr. Lederer has served as chairman of the board of directors of the Trade Bank of New York and is a member of the board of governors of the Whitehall club, New York. These, it is said, are the only offices he has accepted in addition to his duties as director of passenger traffic of the Hamburg-American line.

It is assumed that Mr. Lederer, in his new appointment as the "supreme authority" of the transatlantic passenger conference in this country and Canada, will be given considerable latitude in his movements.

Shipping men generally are confident that he will advance the objectives of the conference, which in his own words are: "—the effective control of competitive relations and the stabilization of the shipping business on a higher plane, in the interest of the companies themselves and their agents, of course, but more particularly for the better and more efficient service to the traveling public."

On being notified of his selection he said in part: "I am highly appreciative of the honor conferred upon me and the great trust placed in me by the Atlantic conference lines. The honor is all the greater because it has been conferred unanimously by my distinguished colleagues in the steamship business here and abroad.

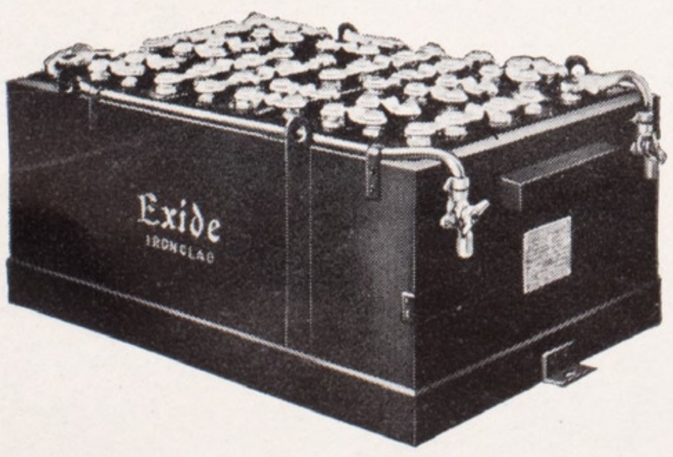
"With my background of experience in the shipping business and my knowledge of the difficulties that have existed in the absence of centralized executive control, I am naturally attracted to the task, as any steamship man would be. But it is only the full co-operation which the conference representatives have promised me, that enables me to give favorable consideration to the offer and the responsibilities the post will entail."

Marine Review

Reg. U.S. Pat. Off.

The National Publication Covering the Business of Transportation by Water

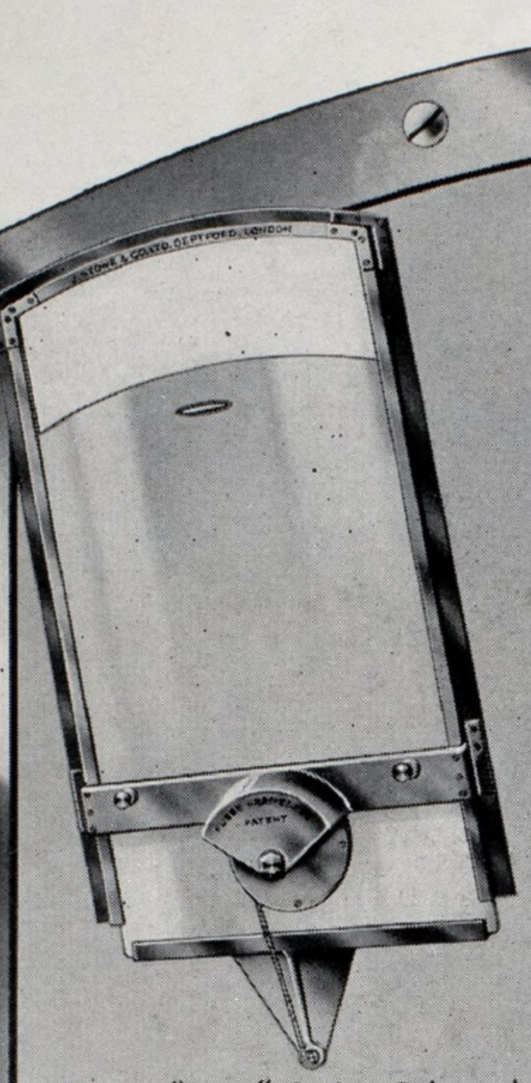
June, 1932



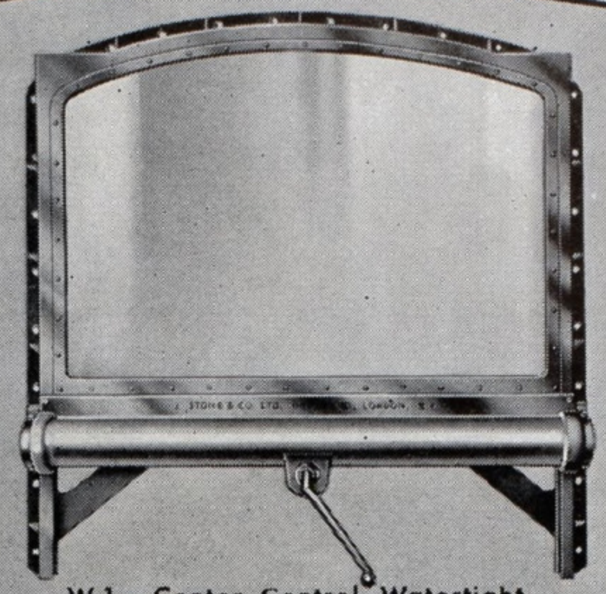
GANGWAY! Low tide at the Boston Terminal of Eastern Steamship Lines may make the climb as steep as 33%. But that doesn't faze this Exide-Ironclad-equipped electric tractor. The heaviest cargo moves briskly over the brow. It's the different construction of the Exide-Ironclad Battery that keeps electrics on the job at a fast speed all day. This sturdy battery is economical to operate, and it gives years of trouble-free service. Investigate.

Exide
IRONCLAD
BATTERIES

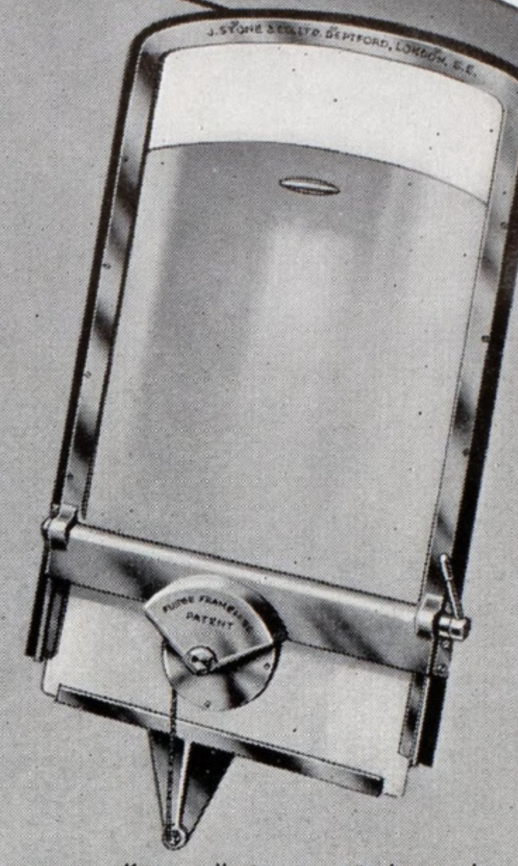
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE
Exide Batteries of Canada, Limited, Toronto



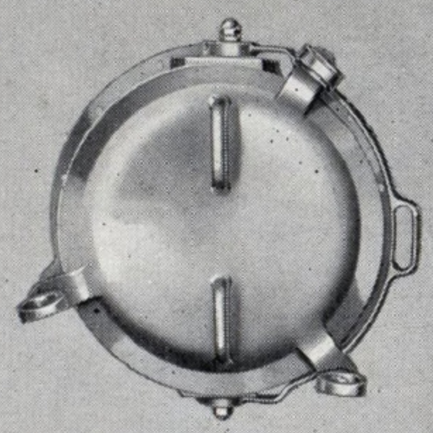
W-60—"Fusee" Spring Balanced Weathertight Window



W-1—Center Control Watertight Window



W-61—"Fusee" Spring Balanced Watertight Window



S-80—"Stirrup" Type Pivoted Sidelight with Portable Deadlight

Have you ever made a study of the Marine Specialties developed by the century-old concern of J. Stone & Company, Ltd., of London?

Were you not impressed by their superiority in almost every respect?

Did you hesitate to buy them because they were imported products and, therefore, perhaps prohibitive in price?

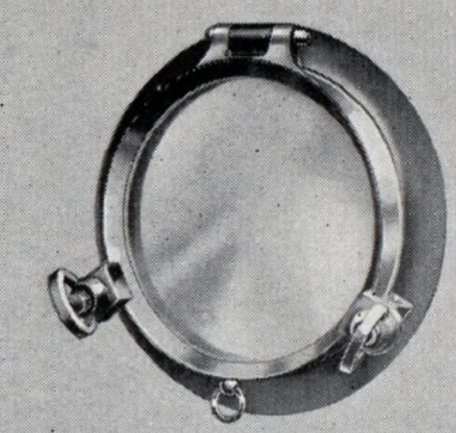
BUT DO YOU KNOW . . .

that these same Stone's Marine Specialties are now manufactured and sold in this country by the AMERICAN LOCOMOTIVE COMPANY?

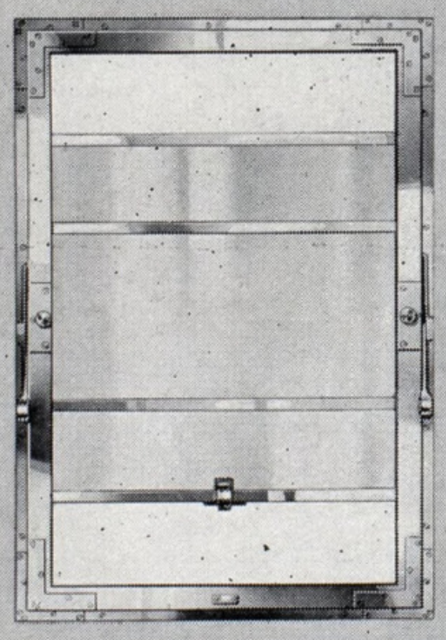
AND . . .

that while retaining the same advanced design and high quality workmanship, they are sold at a most attractive price?

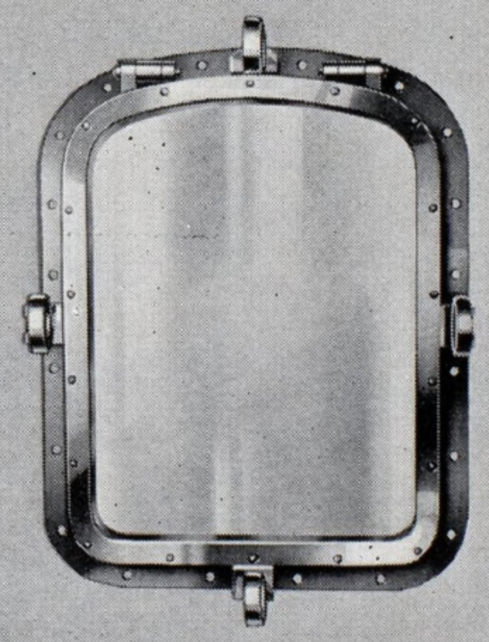
These Specialties include: Ships' Windows and Sidelights of all kinds, Hydraulically Controlled Bulkhead Doors and "Monoflow" Sewage Expellers. In addition, Stone's famous Navy White Bronze is kept in stock for immediate shipment.



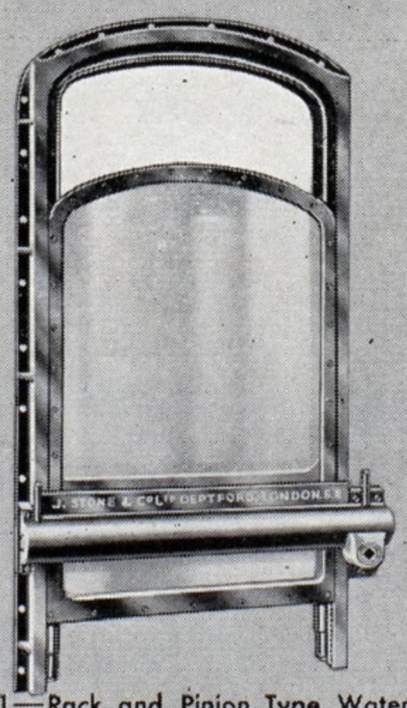
S-59—Direct Pressure Sidelight



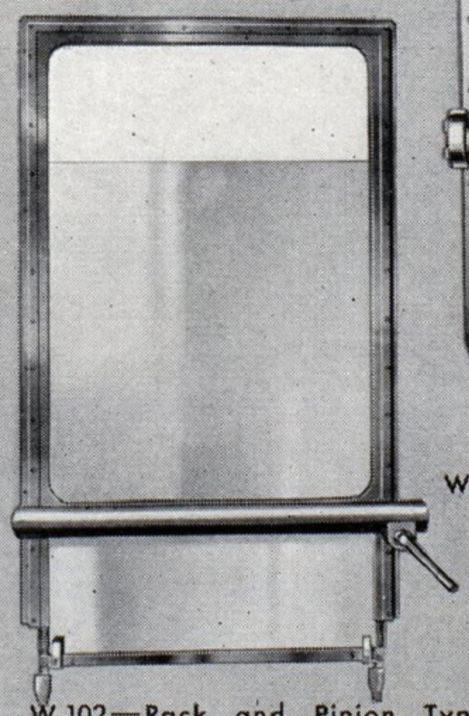
W-64—Self-Balancing Window



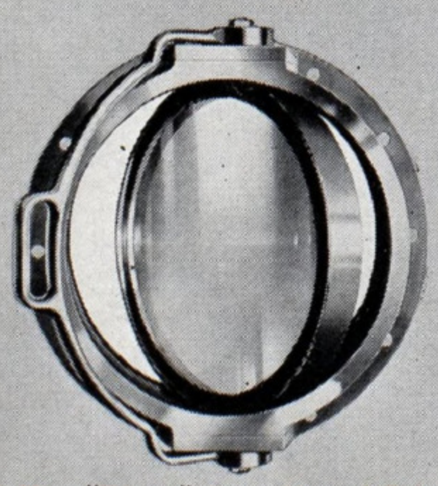
W-24-A—Hinged Pilot House Window



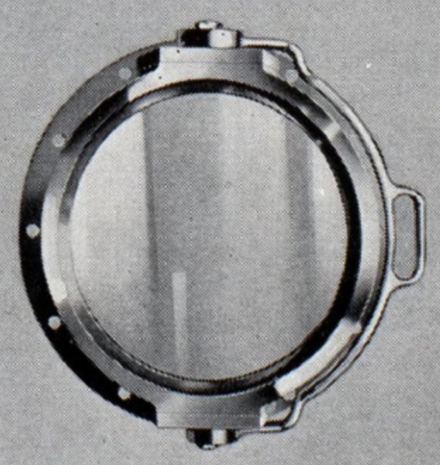
W-1—Rack and Pinion Type Watertight Window



W-102—Rack and Pinion Type Weathertight Window



S-80—"Stirrup" Type Pivoted Sidelight—Partly Open



S-80—"Stirrup" Sidelight—Closed

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET, NEW YORK, N. Y.

Rialto Building . . . San Francisco

Vol. 62, No. 6, June, 1932, issue of MARINE REVIEW, published monthly at Cleveland, O. Entered as second class matter at the post office, Cleveland, Ohio, under the act of March 3, 1879. Subscription price $3.00 a year in U. S.; Canada, $4.00; Great Britain, £1; single copies, 35c.

S.S. PRESIDENT COOLIDGE SETS NEW PACIFIC RECORD

with Westinghouse Turbine-Electric Drive

THE President Coolidge of the Dollar Line on her second homeward bound voyage from Yokohama to San Francisco smashed the speed record for that run by merchant vessels by four hours and four minutes, making the trip in twelve days and eight minutes and capturing the record from the Asama Maru, a new Japanese diesel driven mail liner.

The President Coolidge, largest of American turbine electric liners, is propelled by Westinghouse machinery. The superb performance of her propelling equipment has made this luxurious liner speed queen of the Pacific.

The confidence of the Dollar Line in the ability of Westinghouse engineers to design and build a superior type of turbine electric drive has been completely justified. The President Coolidge has more than met the guarantees of performance and speed.

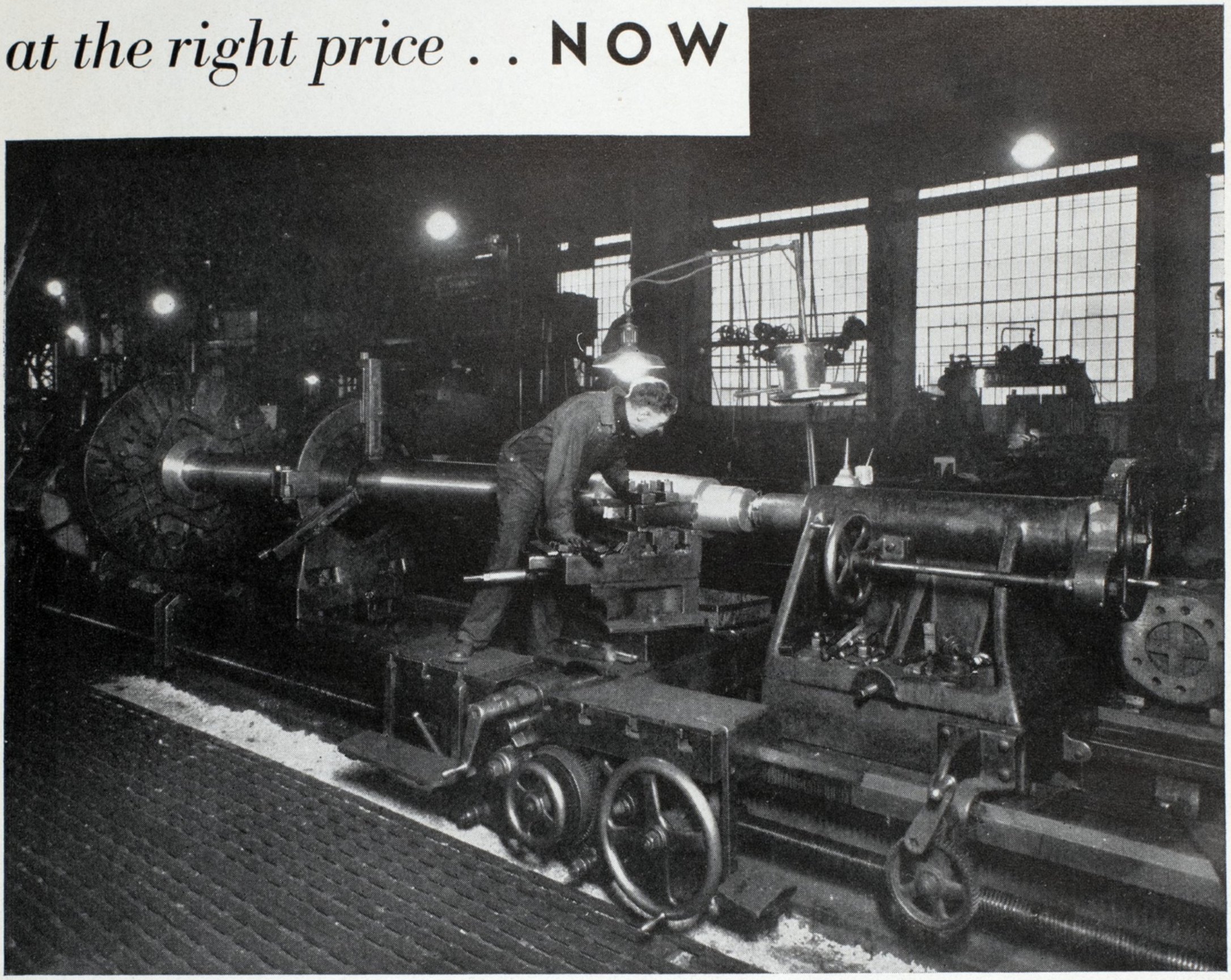
Westinghouse

T 79184

Quality workmanship guarantees every Westinghouse product

READY TO DO A GOOD JOB

at the right price . . NOW



• Again we remind you that right near you is an American Ship organization ready to serve you with repair work, improvements and alterations for your ships—done adequately and dependably at right prices.

We offer you complete, modern facilities for building and repairing ships, plus a trained and experienced personnel—who are interested in doing each job the best way possible.

And, of course, you are aware of these three salient facts:

1 Labor is eager to go. Work can be done better and cheaper now.

2 Material costs are down.

3 Work can be done quickly.

. . . .

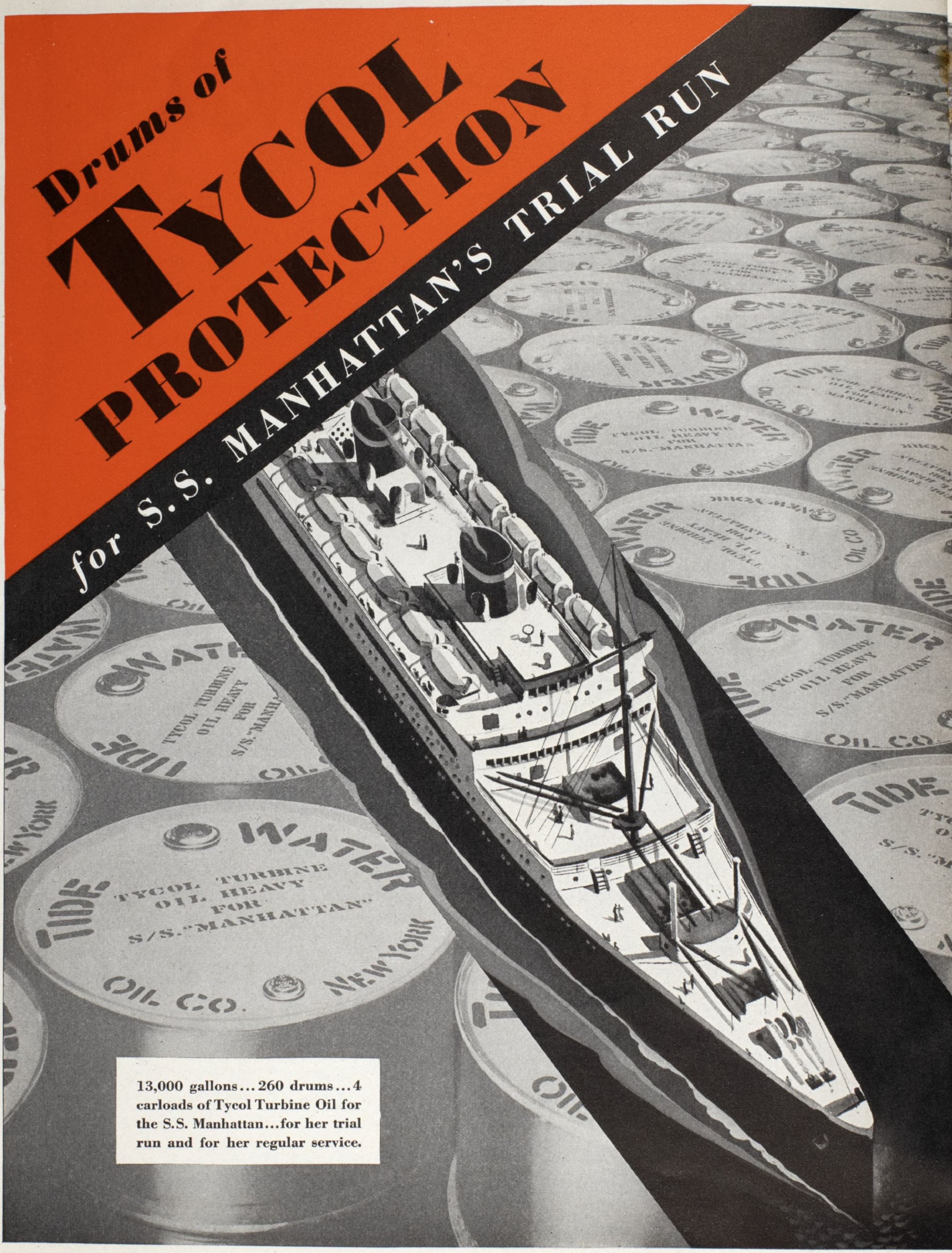
We are ready—and we await your instructions.

The AMERICAN SHIP BUILDING CO.

CLEVELAND	LORAIN	BUFFALO	SOUTH CHICAGO	SUPERIOR
American Ship Building Co.	*American Ship Building Co.*	*Buffalo Dry Dock Company*	*Chicago Ship Building Co.*	*Superior Shipbuilding Co.*

Drums of TYCOL PROTECTION

for S.S. MANHATTAN'S TRIAL RUN



13,000 gallons... 260 drums... 4 carloads of Tycol Turbine Oil for the S.S. Manhattan...for her trial run and for her regular service.

MOST IMPORTANT TRIAL RUN

in American Merchant Marine History

Largest liner ever to come from American shipyards . . . most important and finest product of American shipbuilding, the S.S. Manhattan is *the marine event* of 1932.

No wonder her trial run is important to her builders, the New York Shipbuilding Co. and to her future owners, the U. S. Lines. No wonder the selection of Tide Water lubricants must be considered a significant choice...Tycol Turbine Oil for the 30,000 shaft horsepower turbines . . . Tycol Oil for general lubrication.

Once more, engineers place their faith in Tide Water and in the new non-sludging Tycol Turbine Oils. Refined by Tide Water's SO_2 (Edeleanu) Process, these oils are establishing new records in heavy duty service on sea and on land.

WHY TIDE WATER'S SO_2 PROCESS MINIMIZES SLUDGE

Sludge-forming hydrocarbons are present in all lubricating distillate . . . even in the 100% paraffine base distillate used for Tycol Turbine Oils. These hydrocarbons can not be completely removed by the usual sulphuric acid refining method, *without injuring* the good lubricating compounds. Thus it has been impossible to refine an oil *chemically* to the point where *all* sludge-forming elements were removed.

But Tide Water's new SO_2 Process is *physical.* The sulphur dioxide is employed solely as a selective solvent. It dissolves the undesirable hydrocarbons so that they can be, and are, drained off. But it produces no chemical change in the lubricating compounds.

BETTER STABILITY PROVED IN SERVICE

The Tide Water SO_2 Process, depending on physical solution, produces an oil of minimum acidity. This, combined with exceptionally low oxidation rate, low-sludging tendencies, and better demulsibility, gives to Tycol Turbine Oils a stability which means long, economical service.

INDUSTRIAL TYCOL OILS-GREASES

TIDE WATER

"MODERN LUBRICATION FOR STEAM TURBINES"

Send for this 40-page book about the Tide Water SO_2 (Edeleanu) Process. Replete with diagrams and illustrations, useful tables, operating hints, suggestions for care of oils. Write Tide Water Oil Sales Corporation, 17 Battery Place, New York.

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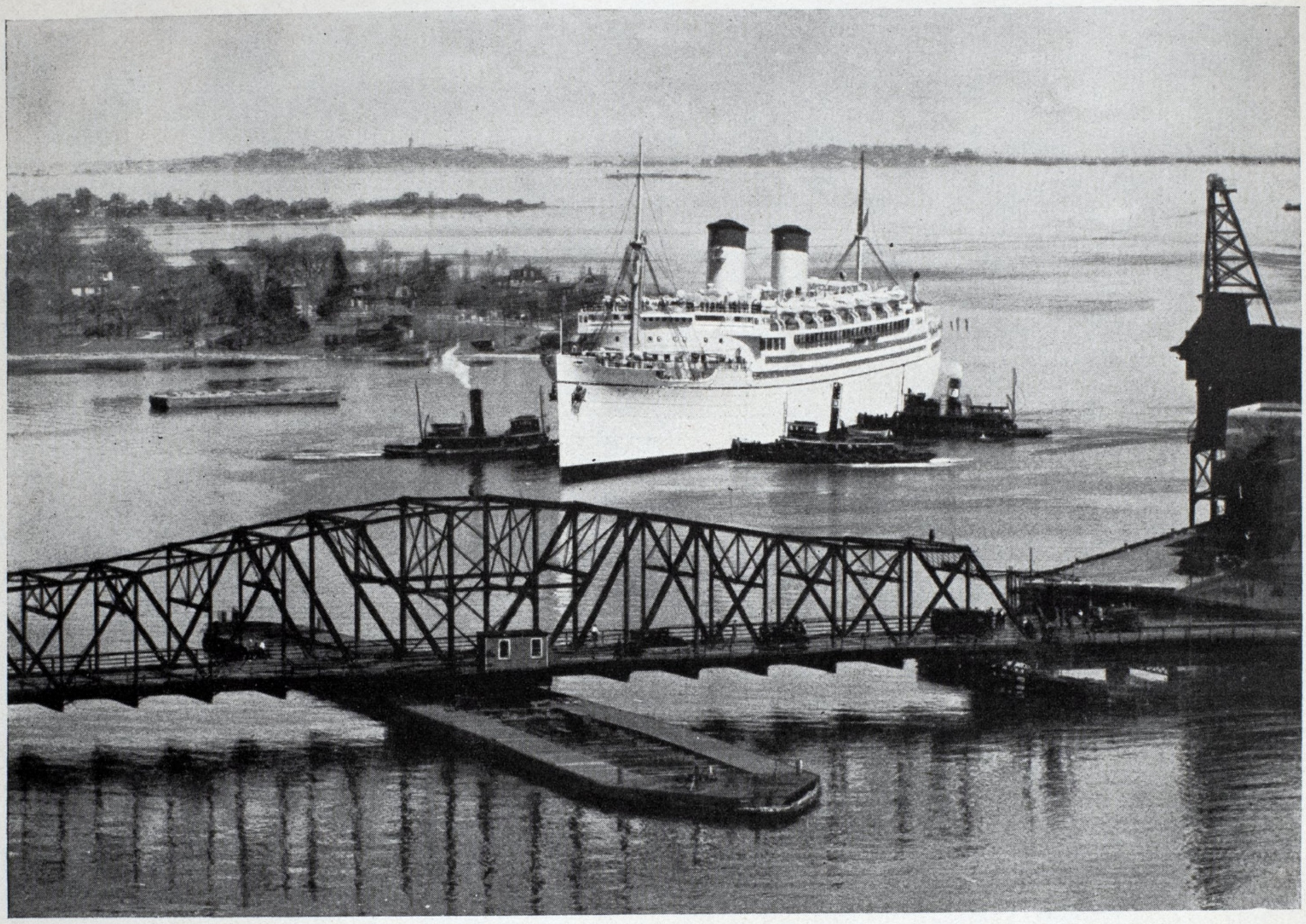
BETHLEHEM completes Second MATSON LINER

★ S. S. MONTEREY ★



S. S. Monterey Returning to Fore River Plant After Completing Successful Official Trials.

THE excellent results obtained on the official trials are indicated by the following data:—

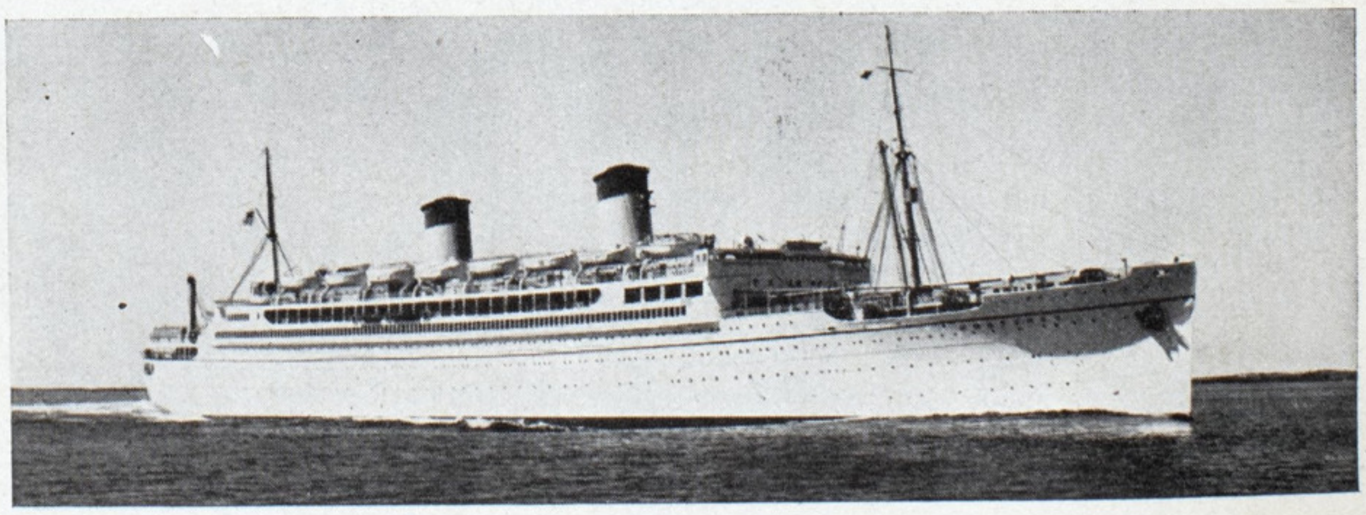
SPEED Highest run.....23.003 knots (28,900 s. hp.)
Highest average.....22.260 knots (28,825 s. hp.)

FUEL CONSUMPTION Average for all purposes during 12 hour, full-power run when developing 23,130 s. h. p.:

★ .626 POUNDS PER S.HP. PER HOUR

Delivery to the Matson Line was made on April 29th, ahead of contract time.

Length overall, 631 ft. 6 in.
Length at water line, 628 ft.
Length between perpendiculars, 605 ft.
Beam, moulded, 79 ft.
Depth, moulded, to "B" deck, 61 ft.
Mean load draft, 28 ft.
Load displacement, 25,827 tons
Trial displacement, 23,250 tons
Propelling machinery, Bethlehem Marine Turbines



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General Offices: Bethlehem, Pa.
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BETHLEHEM STEEL

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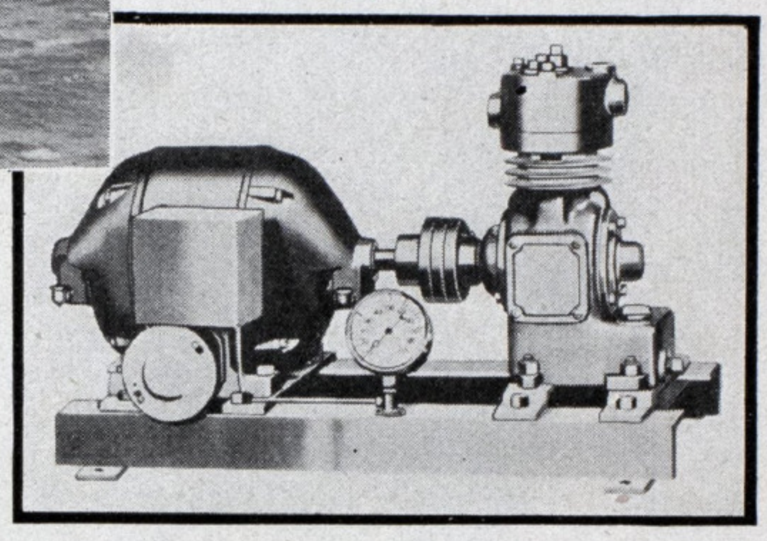
WESTINGHOUSE

AIR COMPRESSORS—

This Schooner Yacht "YAWIM", built by the Burger Boat Company, has a Westinghouse 2½ cu. ft. Compressor supplying air for signal horns

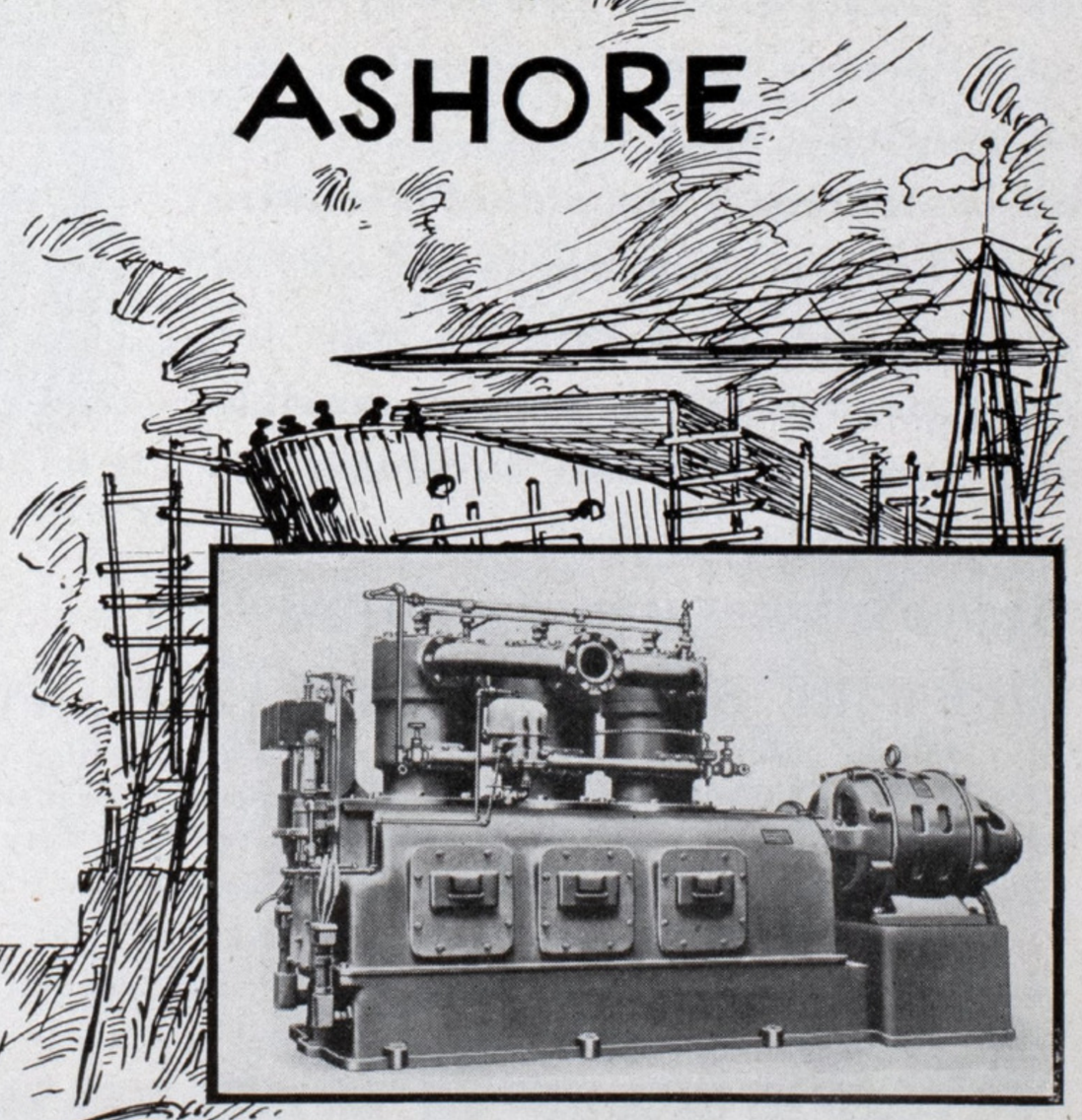


WHEREVER compressed air is needed in marine service—on small yachts for signal horns . . . on freighters for scaling hammers, paint sprayers, or hoists . . . on passenger liners for water raising systems, boiler tube cleaners or steering gear . . . on pile drivers for wood borers and saws . . . in light houses for fog horns . . . or in ship yards for pneumatic tools —there Westinghouse compressors are ideal because they are compact, self-contained, automatic, efficient, reliable, economical, durable . . . Many types and sizes are available, ranging from 2½ to 300 cu. ft. displacement, steam driven or motor driven. « » « » « » « » « » « »

•••

WESTINGHOUSE
TRACTION BRAKE CO.
Industrial Division
PITTSBURGH, PENNSYLVANIA

AFLOAT AND ASHORE



This is the Westinghouse Type 3VS Compressor, 300 cu. ft. displacement, suitable for use in ship yards, on docks, on dredges and on large vessels. « » « » « »

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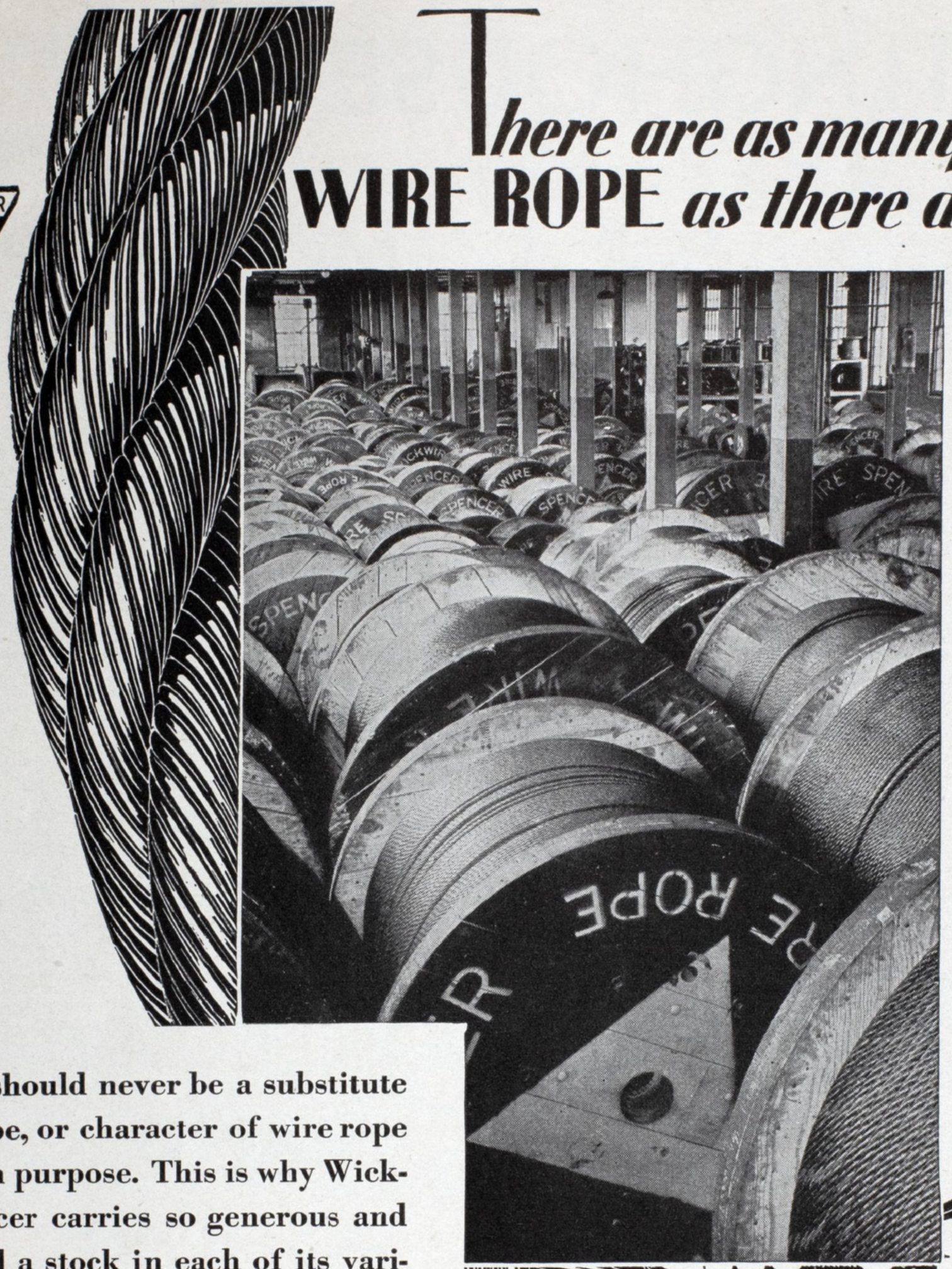
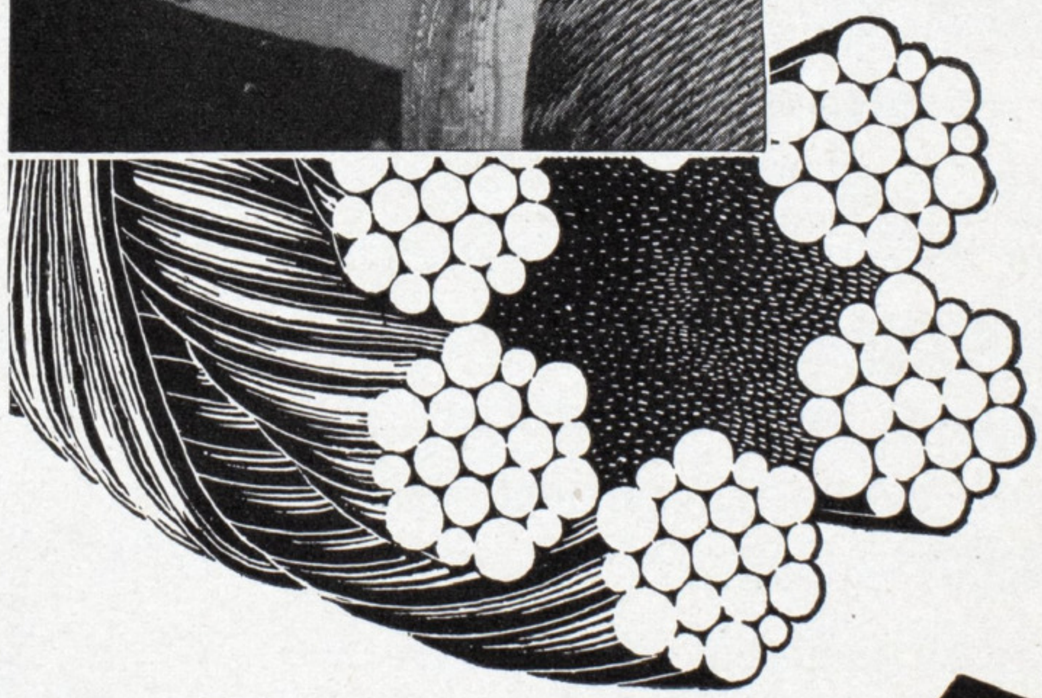
WISSCO PRODUCTS

There are as many kinds of WIRE ROPE *as there are uses...*



THERE should never be a substitute of size, type, or character of wire rope for a given purpose. This is why Wickwire Spencer carries so generous and so assorted a stock in each of its various warehouses. The aim of Wickwire Spencer Steel Company is not only to produce the finest possible rope for every purpose but to make it possible and easy for the user to obtain the rope that suits his need....to profit by the employing of a rope that fits the job.



WICKWIRE SPENCER STEEL COMPANY, 41 East 42nd Street, New York City; Buffalo; Chicago; Detroit; Cleveland; Philadelphia; Worcester; Tulsa, 314 East Archer Street; Pacific Coast Headquarters: San Francisco; Branches and Warehouses: Los Angeles, Portland, Seattle. Export Sales Department: New York City.

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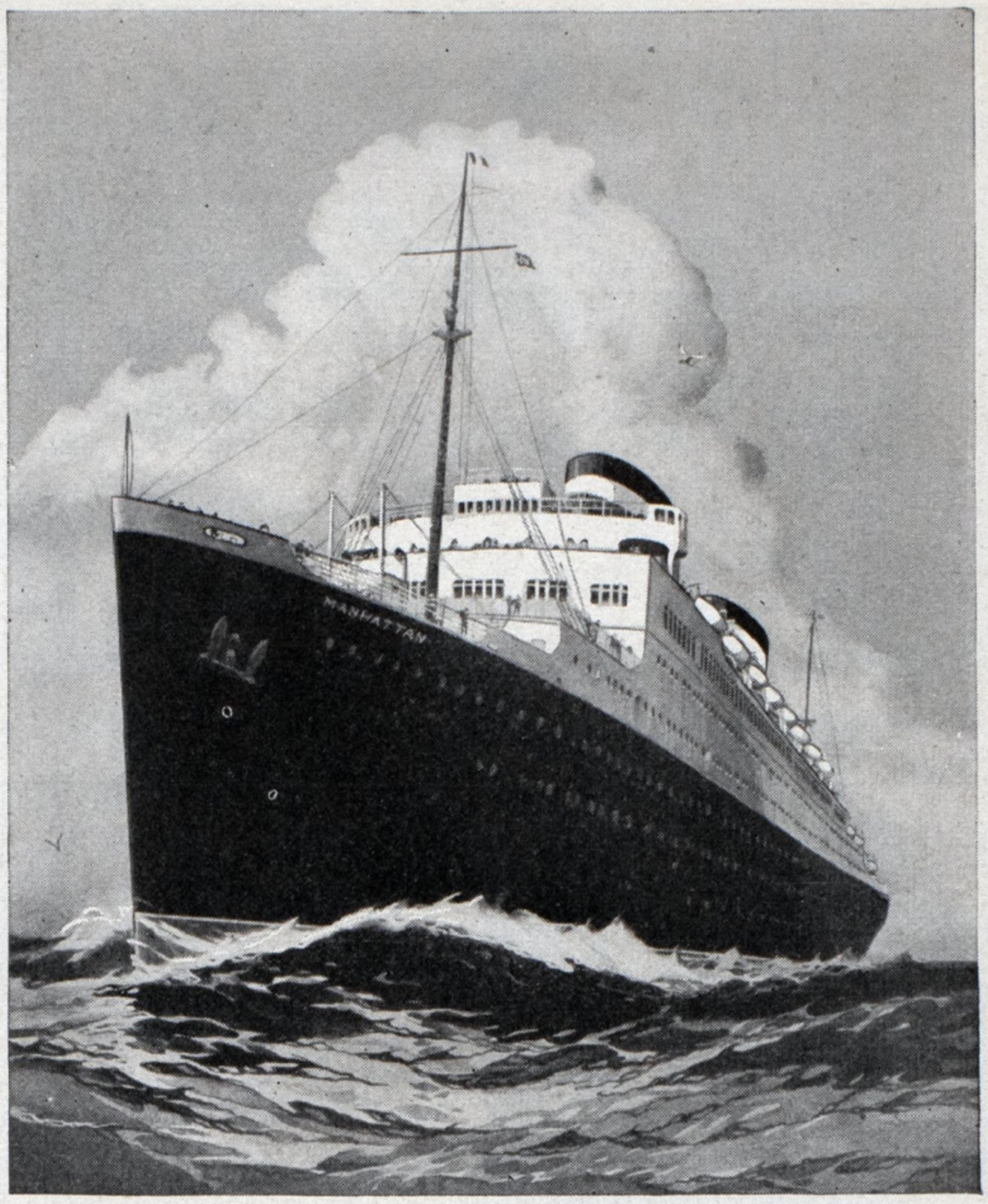
The Largest American Built Ship . . . and Modern Steam



The S. S. Manhattan

THE S. S. Manhattan, mighty express liner of the United States Lines and the largest ship ever built in America, will be assured of efficient and economical propulsion from Modern Steam at 400 pounds pressure and 670° F. total temperature.

Both this and a sister ship will be equipped with Babcock & Wilcox Express Type Marine Boilers, Air Heaters, Superheaters, Oil Burners, Desuperheaters, and will have furnaces lined with B. & W. No. 80 Firebrick . . . equipment built by a thoroughly trained and progressive organization with more than three decades of experience in the highly specialized engineering required for the solution of marine power problems.

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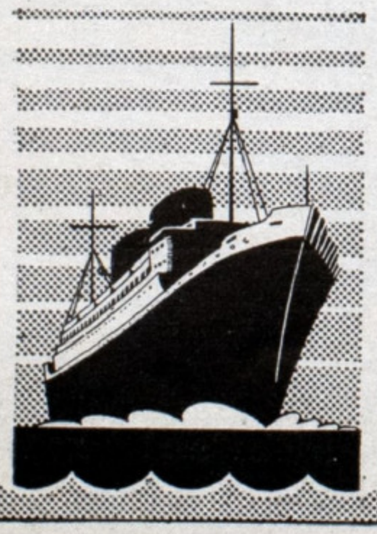

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Passenger Services: New York to Cherbourg, Southampton and Hamburg. New York to Galway, Cobh (Queenstown), Cherbourg and Hamburg. North Pacific Ports to Hamburg, Bremen and Antwerp via Panama Canal.

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MANUFACTURERS OF
Accurate "Non-corrosive" Pressure and Recording Gauges, Revolution Counters, Marine Clocks.
Dead Weight Gage Testers.
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Extra Heavy Renewable Globe, Angle and Check Valves.
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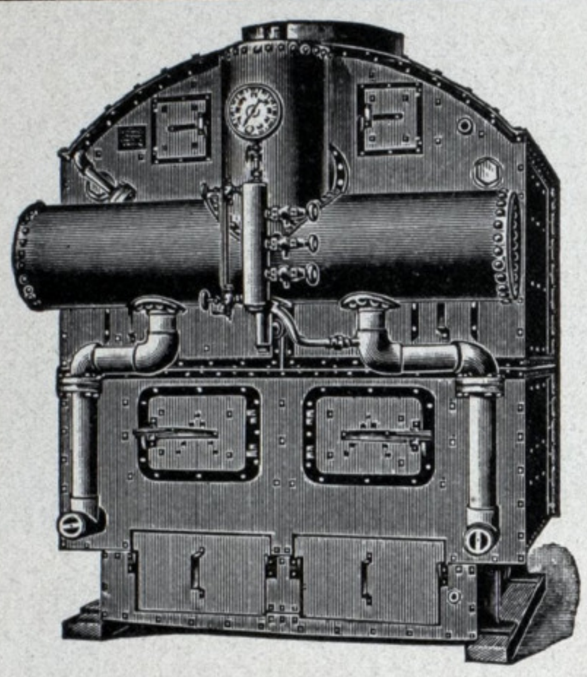
HIGH GRADE THROUGHOUT
SPECIFY AND ORDER THE BEST.
Branches: CHICAGO PITTSBURGH NEW YORK



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Builders of Sectional Water Tube Boilers for all types of vessels

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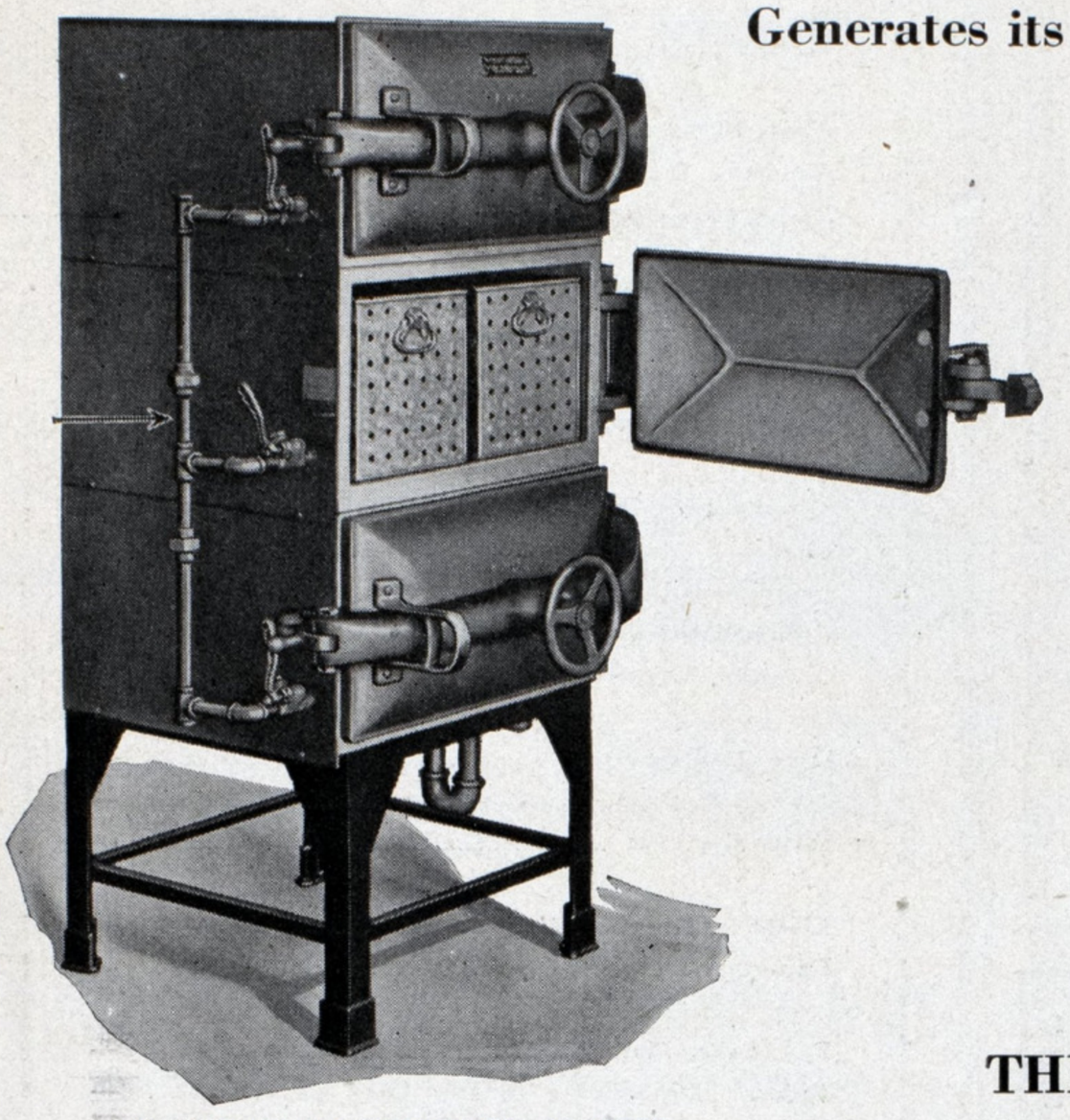

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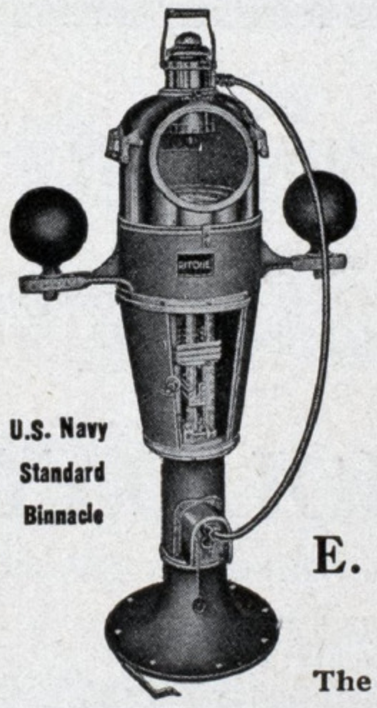

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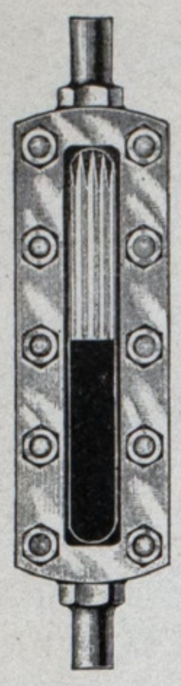

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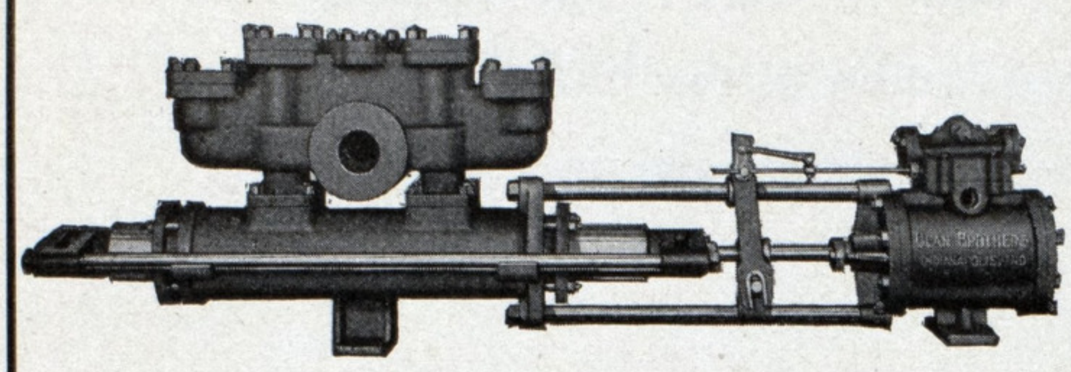

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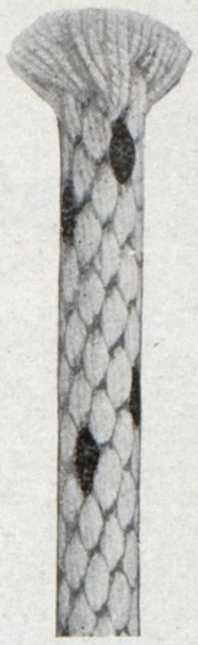

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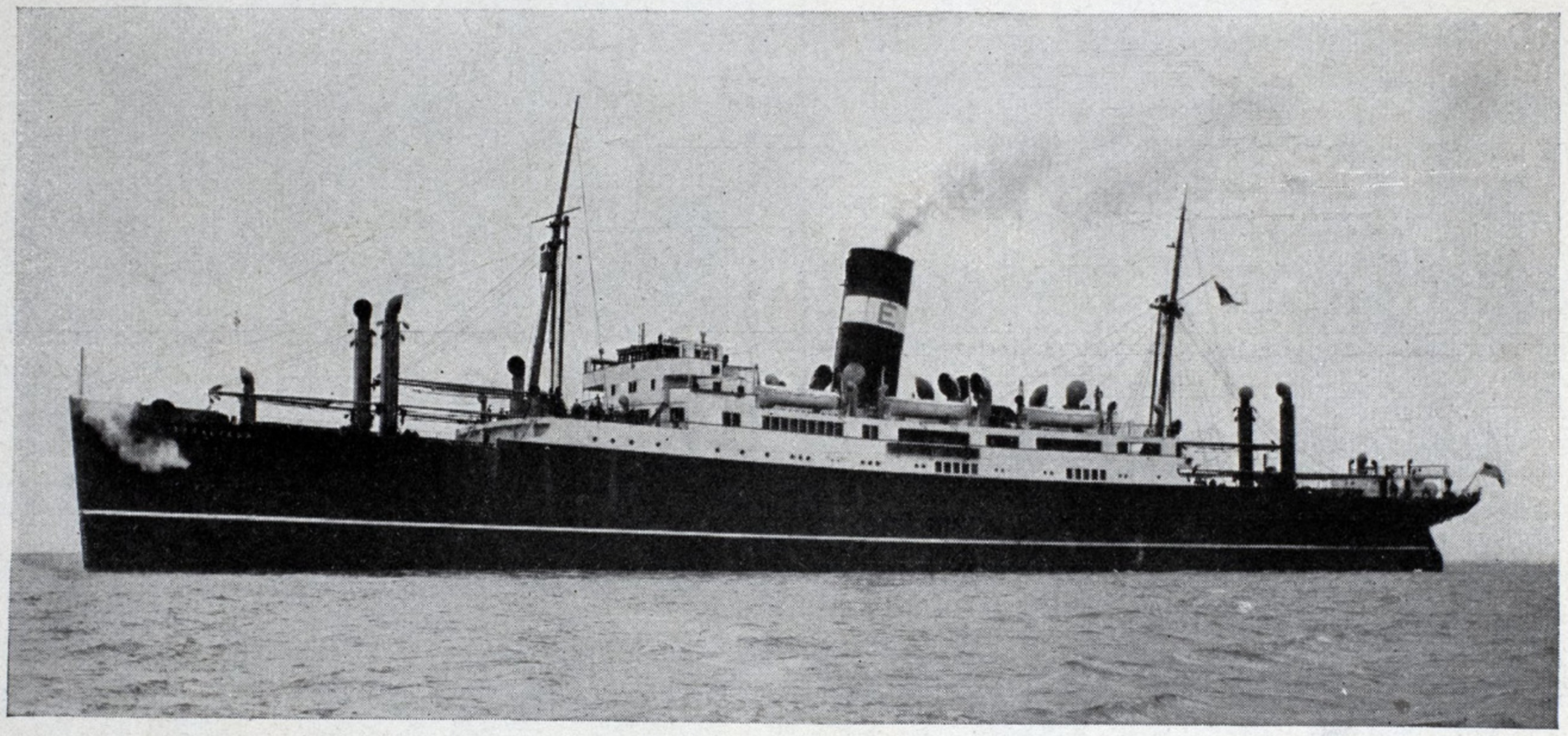

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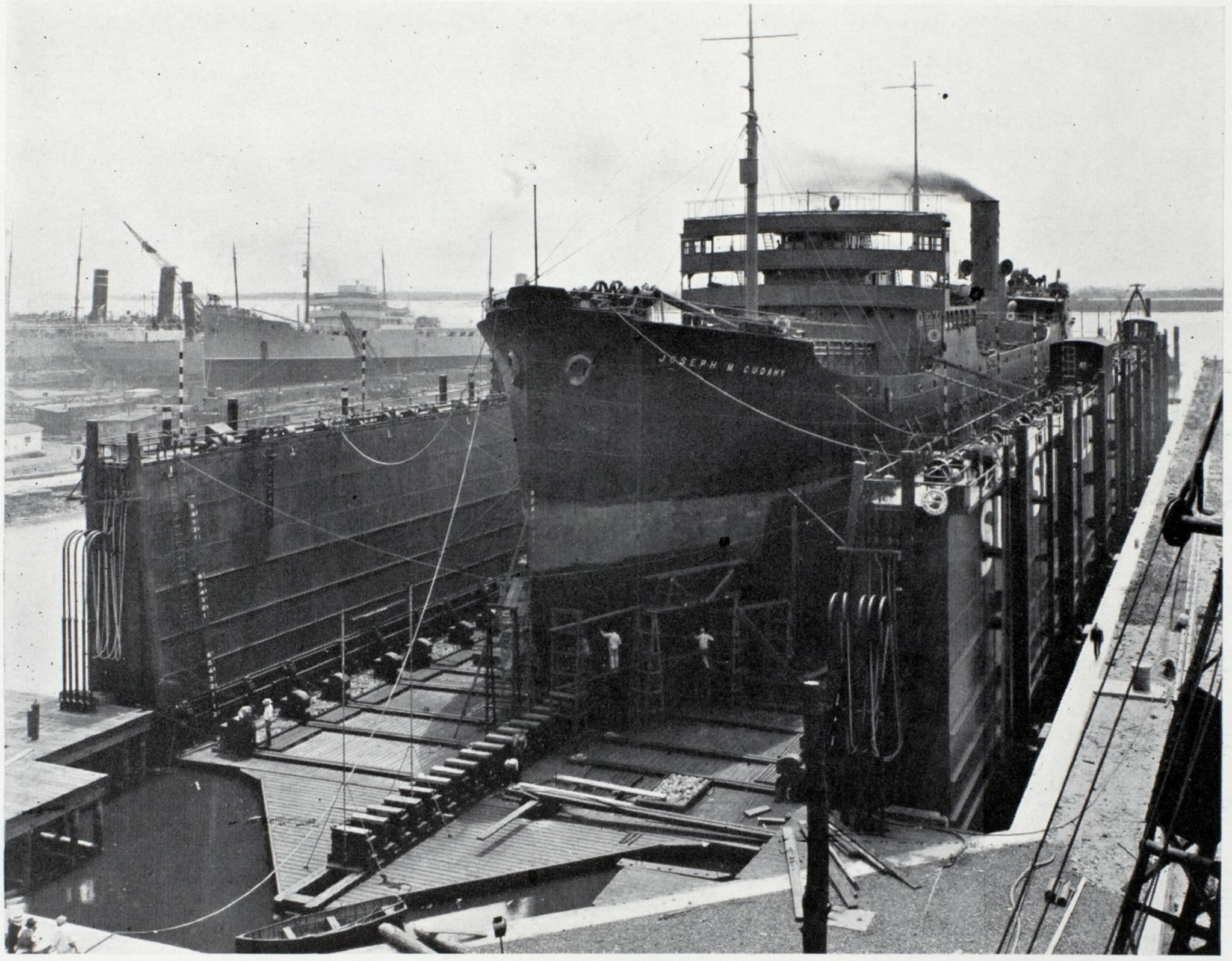

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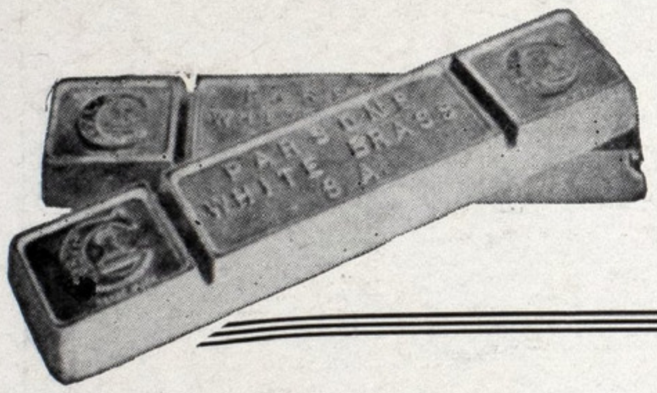

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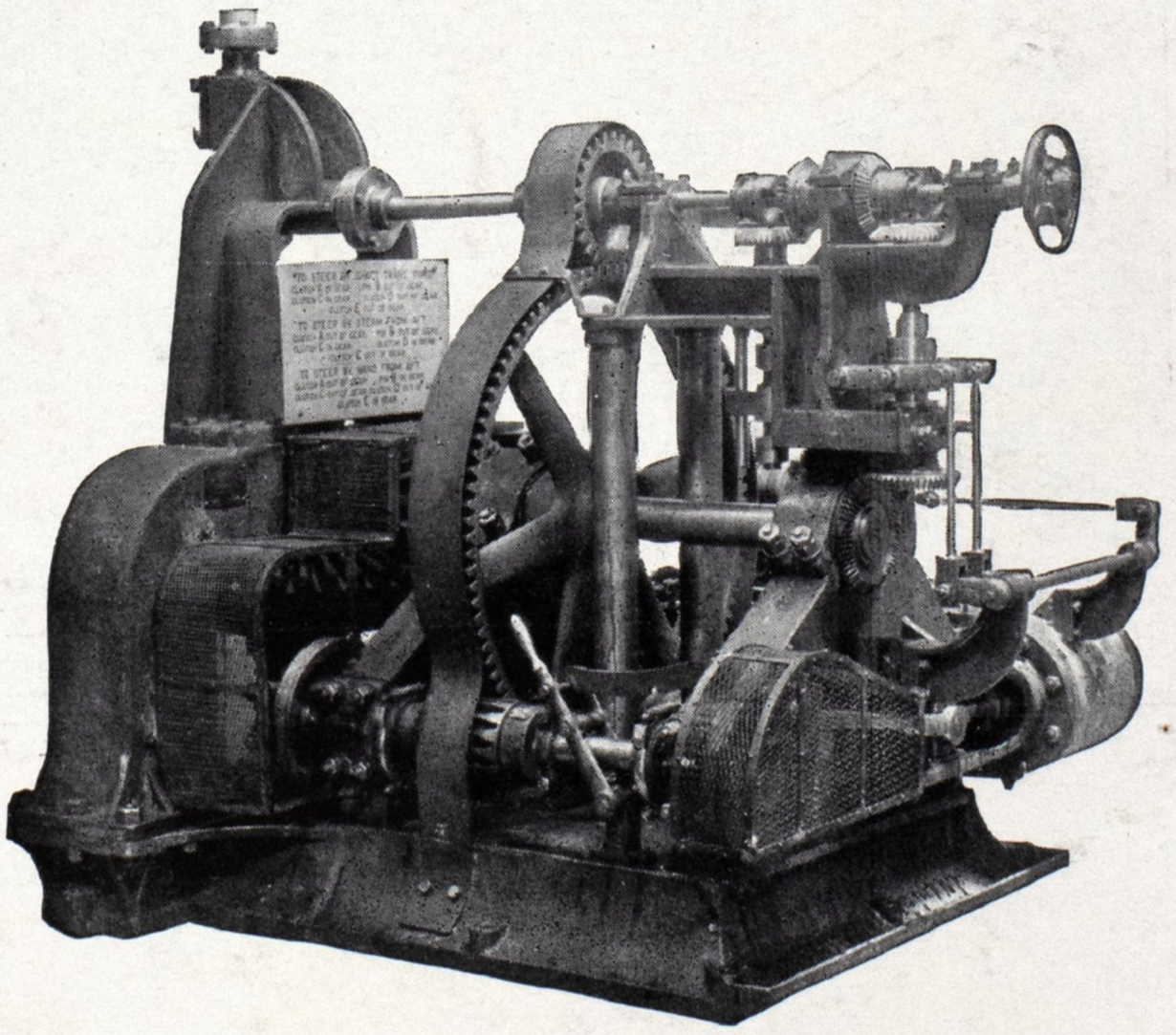

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